Perceptions of the Built Environment and Active Travel in Children and Young People

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Declaration

I declare that the writing of this thesis and research contained within is my own work. Any assistance received has been acknowledged where appropriate.

Signed: _____

Rose-Ann Gahan

Date: _____

Ní heolas go haontios

There is no knowledge without unity

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Abstract

Overview: Active transport is on the decline in children and young people. Research suggests that people's perceptions of the neighbourhood and built environment can affect this. The purpose of this study was to investigate children, young people and their parents opinions of barriers to walking and cycling, their freedom to travel independently, on foot or by bike and how their perceptions of their neighbourhood affected this.

Methodology: This is a mixed methods study that uses questionnaires, environmental audit, interviews and workshop based group data collection. Data was collected from children and young people, male and female, aged between 8 and 18 years who are members of or attending Foroige Youth Groups and/or afterschool programmes in Waterford City and County and their parents and youth leaders. The youth groups were chosen from rural and urban areas of Waterford.

Results: Overall the majority of participants reported that they walk and cycle to various locations. According to parents distance was a major barrier which, influenced their decision in allowing their child(ren) to walk or cycle alone. This study also shows that children and young people are aware of the physcial aspects, e,g, traffic calming measures that are around their neighbourhood.

Conclusions: Increased distance to travel is associated with low levels of walking and cycling in children and young people. A decrease of speed limits especially around schools may help to promote more active transport. Children and young people should be consulted about the physical aspects of their neighbourhood that affect their active transport and physical activity levels, such as the location of pedestrian crossings and cycle lanes.

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Chapter 1: Introduction

Introduction

Low levels of physical activity have notable health consequences for children including increased risk of obesity (Trost, Owen, Bauman, Sallis and Brown 2002), low bone density (Bailey and Martin 1994) and low physical fitness (Morrow and Freedson 1994). The role of physical activity in the reduction of obesity is becoming increasingly important as obesity has emerged as one the most prevalent paediatric chronic illnesses in Western Countries today (Loucadies, Chedzoy and Bennett 2004). According to Davison and Birch (2001) approximately 25% of US children between the ages of 6 and 17 years are overweight or at risk of being overweight. In Ireland 300,000 children and young people are obese and this is projected to increase by 10,000 every year (Irish Taskforce on Obesity 2005). In addition, children who are not physically active are denied the positive social and emotional benefits of physical activity that include higher self esteem, lower anxiety and lower stress levels (Davison and Lawson 2006).

Since the middle of the last century the physical requirements of daily life have been substantially reduced due to major technical innovations such as automation and the consequent decline of physically active occupations, labour saving devices in the home (Fox and Hillsdon 2007), the ready accessibility of televisions (Davison and Birch 2001) and the dominance of the car for personal travel (Lumsdon and Mitchell 1999). High rates of television viewing contribute to low levels of physical activity due to the increasingly child-centred nature of programmes, a lack of monitoring by parents, a lack of outdoor play areas, unsafe neighbourhoods and the planned use of television by parents as an electronic babysitter (Davison and Birch 2001). According to Hoehner, Brennan Ramirez, Elliot, Handy, and Brownson (2005) people now travel further to get to destinations and spend increasingly longer times in their cars. This poses specific challenges for increasing population physical activity levels. Figures from the Dublin Transport Office (2007) show that, consistent with other Western Countries, fewer Irish children are now walking and cycling to school.

Recent figures from the Irish Central Statistics Office (CSO) show that there has been a marked decrease in the percentage of children aged 5-12 travelling to school on foot between 1986 (45.2%) and 2006 (24.3%: CSO, 2008). Among students aged 13-18, the decrease in those travelling by foot was less (from 31.1% in 1986 to 24.4% in 2006),

though there was a greater proportional increase in those travelling as a car passenger, from 10.8% in 1986 to 31.5% in 2006 (CSO, 2008). The CSO also found that the percentage of children and young people cycling to school or college decreased from 15% in 1986 to 2.4% in 2006, while the percentage using a bus remained more stable at just over a third. This change is also evident in other countries. In the mid 1980's, 67% of children in Great Britain aged 5-10 years walked to school and more than six percent of children 11-16 years old cycled. By the late 1990's this had fallen to 56% of 5-10 year olds walking and less than 20% of 11-16 year olds cycling (World Health Organisation (WHO), 2002). Rahman, Cushing, and Jackson (2011) found that in America approximately 44% of kids commute to school by car due in large part to a lack of neighbourhood footpaths and concerns about distance and traffic safety. Bassett, Pucher, Buehler, Thompson and Crouter (2008) also found that in America only eight percent of trips were made by walking, cycling and public transport compared to 67% of such trips in Latvia.

Compared with previous generations, children today also spend less time playing outdoors within the neighbourhood and therefore opportunities for physical activity in this domain are being missed (Veitch, Salmon and Ball 2010). In addition, between 1981 and 1997 children's free playtime dropped by an estimated 25% and this change appears to be driven by increases in the amount of time children spend in structured activities such as team sports (Hofferth and Sandberg, 2001 as cited in Burdette and Whitaker, 2005b). Limiting children's exposure to the outside world unless accompanied by an adult affects the development of their social and emotional skills (Hillman 2006). According to Hillman (2006), although places such as adventure playgrounds are dedicated to children's freedom of expression in the outdoor environment - where they can discover themselves, children are in effect being offered a safe place to play predominantly under adult supervision.

According to Rahman et al.. (2011) the disappearance of physical activity from the daily lives of adults and children is a complex problem. Research has found that the presence of footpaths, safe connectivity between areas in a neighbourhood, walkable communities, good access to various locations such as the shop, appealing green spaces and public transit can help improve everyday quality of life (Rahman et al.. 2011). Studies have found that neighbourhoods that consist of a mix of residential,

commercial, retail and recreational destinations frequently result in more resident physical activity such as walking and cycling (Frank, Andresen, Schmid 2004).

Active transportation is the blanket term used to describe travel by foot, bicycle and other non-motorised means (e.g. foot powered scooters) and it often forms part of a trip chain for public transport (Giles-Corti, Foster, Shilton and Falconer, 2010). Active transport can help to improve children's health by increasing levels of physical activity, helping children maintain a healthy weight, reduce injury due to motor vehicle crashes, reduce environmental health damage caused by excessive car use (e.g. air and noise pollution) and reduce inequalities in children's health associated with physical activity and obesity (Badland and Schofield 2005; Ming Wen and Rissel 2008; Garrard, 2009). According to Timperio et al.. (2004), walking and cycling to school and to other destinations in a child's local neighbourhood have been shown to be associated with greater anatomic function, may be an important source of physical activity among children and may help to establish active lifestyle habits such as active transport.

As cities become more sprawling and less connected, few realistic alternatives other than private automobile use are available (Badland and Schofield 2005). According to Hillman (1993), between 1971 and 1990, when road traffic levels nearly doubled, there was a dramatic reduction in children's independent mobility. In adults active transport offers promise as a sustainable option as it fulfils the dual purpose of physical activity and transport (Badland and Schofield 2005), but not enough is known about the determinants of children and young people's active transport habits. According to De Vries et al.. (2010), while walking and cycling to school are associated with an increased level of overall active transportation, physical activity, energy expenditure and cardiovascular fitness, walking and cycling to school has long been over looked as a source of daily physical activity for children. Travelling independently using active transport, benefits children's physical and mental health as well as their development as autonomous individuals (Thomson, 2009).

A Conceptual Framework

Social ecological models are increasingly being used to gain an insight into the role of the built environment in walking and cycling. This approach recognises the multiple effects and inter-relatedness of the relationship that exists between the individual and their environment. The relationship operates at many levels, typically, individual

(attitudes, skills, knowledge), group/community (family, friends, organisational), environmental (the built & natural physical environment) and policy (national and local laws & strategies: King, 1998; King, Jeffery, Fridinger, Dusenbury, Provence, Hedlund and Spangler 2005; Cazuza de Farias Junior, Lope, Mota, Santos, Riberio and Hallal 2011; WHO 2011).

In studies using this perspective, active transportation has been found to be associated with street connectivity, land use mix, distance to a destination, steep inclines, neighbourhood safety (e.g. windows facing the street), traffic safety (e.g. heavy traffic, traffic lights, pedestrian crossings and limited public transport), neighbourhood aesthetics, presence of street trees and facilities near home (e.g. walking and cycling trains, stores parks and sports fields: De Vries, Hopman-Rock, Bakker, Hirasing and Van Mechelen 2010). However, most of this research has been conducted with adults. There is not enough information available on how these factors affect active transport levels in children and young people, what children and young people think about these factors and what influence their parents have on their active transport habits. In addition, there is very little research in this whole area in a Irish context. It is unclear whether the associations found in other countries between environmental-level factors and physical activity and active transport are directly applicable here.

This study aims to explore the relationship between active travel in children and young people and both their's and their parents' perceptions of the built environment, such as personal and road safety and feelings about the neighbourhood.

Chapter 2: Literature Review

Review of Literature

The Built Environment

The affect of the built environment on physical activity levels is a relatively new area of enquiry and according to Davison and Lawson (2006) over the past number of years the physical or built environment has come to the forefront of public health research. The built environment has been defined in many different ways by researchers. The most common and simple definition is that it can be defined as the part of the physical environment that is constructed by human activity (Saelens and Handy 2008). Definitions of the built environment can be similar or the same as the definitions of the neighbourhood environment. In this study the built environment refers to structural aspects of an area such as the presence of footpaths, street connectivity, while the neighbourhood environment refers to perceptions of the neighbourhood which is a sub-component of this.

Researchers and policymakers now recognise the prominent part neighbourhoods play in shaping individual physical activity levels and population health (Wilson, Elliot, Law, Eyles, Jerrett and Keller-Olaman (2004). Residents' subjective definition of neighbourhood might include only the block on which they live or the streets on which family, friend, or familiar faces live; everyone has a different definition of their neighbourhood (De Visscher and De Bie 2007). According to Oakes, Forsyth and Schmitz (2007), research in transportation and physical activity has identified four key built and neighbourhood environment factors thought to affect walking behaviour. These are:

1) Density

Density is thought to be important because higher densities tend to create a critical mass of people that may contribute to more people to be seen out walking that, in turn, creates a sense of safety (Oakes et al.., 2007).

2) Street pattern or connectivity

This affects the directness of travel by making travel more or less efficient. The number of alternative routes may affect people's interest and safety (Oakes et al.., 2007).

3) Mixed land uses or the presence of destinations

According to Frank and Pivo (1994), mixed use developments are those with a variety of offices, shops, restaurants, banks and other activities intermingled amongst one another.

4) Pedestrian infrastructure and design related to the issues of comfort, safety and interest.

Walking occurs primarily in neighbourhood streets and public facilities, and the character of such places influences the degree to which they are safe, comfortable and attractive for walking (Saelens and Handy, 2008). According to Chin, Van Neil, Giles-Corti and Knuiman (2008) neighbourhoods that are designed using traditional grid networks can help to increase walking by reducing the distances to facilities by providing multiple route options.

Figure 1 below shows a picture of Adamstown, a new purpose built neighbourhood in Co. Kildare, Ireland. This area is an example of good neighbourhood design. Adamstown consists of homes, commercial developments, educational facilities, rail and bus services and leisure and recreational facilities, all within easy, well connected access of each other (South Dublin County Council, 2009)

Figure 1: Adamstown, Co. Kildare: Example of Good Urban Design

Figure 2 below shows a picture of bad neighbourhood design. There is little or no connectivity between streets and most are cul de sacs. The commercial developments are located at a distance from residential areas, which increases car usage.

Figure 2: Example of Bad Urban Design

The design of cities, neighbourhoods and individual buildings can affect people's levels of physical activity (Dannenberg, Jackson, Frumkin, Schieber, Pratt and Kochtitzky, 2003). According to many studies the built environment has the potential to increase adults physical activity levels at home, at work, in travel and in leisure. Recent studies have found that regional or community environmental characteristics such as fewer sprawls, greater neighbourhood walkability and more access to places for physical activity have demonstrated associations with physical activity (Hoehner et al.. 2005; Boone-Heinonen, Gordon-Larsen, Popkin and Song 2010b).

Physical Activity, Active Transport & the Built Environment

Several studies have found that adults' levels of walking are strongly associated with neighbourhood aesthetics and convenience (Saelens, Sallis, Black and Chen, 2003, Giles-Corti and Donovan 2002, Humpel, Owen and Leslie 2002, Leslie, Saelens, Frank, Owen, Bauman, Coffee and Hugo 2005). Saelens et al.. (2003) compared the physical activity and weight status of the residents in two neighbourhoods in San Diego, California. One was a high 'walkability' neighbourhood that had grid like street patterns, short block lengths and few cul de sacs, the other neighbourhood was a low 'walkability' neighbourhood that had longer block lengths, a mixture of grid like and

curvilinear street patterns and more cul de sacs. Participants chosen for this study were instructed to wear an activity monitor for seven consecutive days during waking hours when they were not engaged in water related activities. Participants were asked to fill in two questionnaires. The first one was one week after receiving the activity monitor and the second survey was approximately one week after receiving the completed first survey. Results from this study found that those who resided in high 'walkability' neighbourhoods engaged in approximately 52 more minutes of moderate intensity physical activity and perceived their neighbourhoods as having higher residential density, street connectivity, aesthetics and pedestrian traffic safety than those who resided in the low 'walkability' neighbourhood. A limitation of this study is that participants may have forgotten to wear the activity monitor or worn it incorrectly.

Giles-Corti, Broomhall, Knuiman, Collins, Douglas, Ng, Lange and Donovan, (2005) examined the relationship between access to public open spaces and physical activity in the urban population in Perth, Western Australia. They conducted an environmental audit of public open spaces and conducted individual interviews with 1803 adults. They found that adults with good access to large, attractive public open spaces were 50% more likely to achieve high levels of walking.

Leslie et al.. (2005) also found that greater 'walkability' and, in addition, access to recreational facilities in the local area is associated with an increased likelihood of being physically active. Both objective (access to open spaces) and perceived (aesthetic) environmental attributes were associated with walking at recommended levels. Leslie et al.. (2005) compared two different areas. One was a high walkable area, as it was closer to the city centre, had grid like street systems with many intersections and is close to many retail stores and services. The other was a low walkable area, further out from the city centre, with cul-de-sacs, fewer intersections, off street parking, few local parks and only one bus service. Participants were chosen through telephone calls and those who agreed to participate were mailed out the surveys. A modified version of the Neighbourhood Environment Walkability Scale (NEWS) was used to assess neighbourhood environment characteristics with known relationships to walking behaviour. These relationships include residential density, proximity to and ease of access to non-residential land uses such as restaurants and retail stores, street connectivity, walking facilities such as footpaths, aesthetics, traffic safety and safety from crime (Leslie et al.. 2005). Results from this study show that car ownership was

relatively high among participants and that public transport was only used by a small percentage of the population. The main differences found between the two areas were that the high 'walkable' neighbourhood reported higher ratings of land use, connectivity and infrastructure for walking compared to the low walkable neighbourhood. The low 'walkable' neighbourhood reported higher ratings of aesthetics and both neighbourhoods did not differ in perceived crime safety or traffic safety which will be discussed in more detail further on.

Similarly, Panter and Jones (2008a) found that people who perceive themselves to have access to walking trails and other places for physical activity were more likely to report some activity compared to adults who reported no access. They studied six neighbourhoods in Norwich, England, of varying socioeconomic statuses. One hundred and seventy self-completion questionnaires were delivered to each neighbourhood randomly. Results from this study found that the three most popular types of activities were walking, swimming and cycling. Participants who were more active tended to be female, better educated and own a dog. Perceived low safety of walking during the day and having poor access to shops within walking distance were associated with lower levels of activity amongst women (Panter and Jones 2008a). Limitations of this study according to Panter and Jones (2008a) are that participants may have been participating in other forms of physical activity outside of the neighbourhood that may not have been counted and that they were relying on self reported physical activity levels which may not always be accurate.

Giles-Corti and Donovan (2002) examined the relative influence of individual, social, environmental and physical determinants of recreational physical activity. They conducted a cross-sectional study on 1803 adults aged between 18-59 in Perth, Western Australia. Participants were asked to fill out a physical activity questionnaire. They found that physical activity was higher with people who had a higher level of education or a good household income. They also found that use of public open space was more responsive to distance than sporting and recreation centres. This means that most users of public open spaces live within close proximity to them. The most popular facilities used were informal facilities such as streets, public open spaces and the beach. Access to facilities may also be a factor that affects active transport in children and young people. If there is greater access to facilities then this may help increase active transport levels.

Boone-Heinonen et al. (2010) state that despite evidence that built environment features, such as access to recreation facilities and street connectivity, may promote physical activity, associations vary dramatically across studies. They used data from The National Longitudinal Study of Adolescents Health in the US. Participants were aged between 11-22 years. Results from this study found that good street connectivity might encourage walking in adults but dead end streets or cul de sacs might encourage street based physical activity in high urban adolescents.

Leslie and Cerin, (2008) examined the association between perceived environmental characteristics, neighbourhood satisfaction and self rated mental health. This study was part of an observational epidemiological study known as PLACE (Physical Activity in Localities and Community Environments) and was conducted in Adelaide, Australia. The sample was drawn from residential addresses within 32 neighbourhoods. Eligible participants were sent two surveys which included questions about the perceived environment, health status and socio-demographic characteristics. Results from this study found that several perceived environment characteristics were independently associated with neighbourhood satisfaction factors. For instance land use mix, diversity, aesthetics and greenery and traffic safety were positively associated with the safety and walkability factor while traffic load and crime were negatively associated (Leslie and Cerin, 2008).

The Neighbourhood Environment

According to Kawachi and Berkman (2003) neighbourhood environments are being increasingly recognised as playing a role in influencing health. Research into neighbourhoods and health is motivated by the idea that we live in places that represent more than physical locations (Weden, Bird, Escarce, Laurie, 2010). Kawakami, Winkleby, Skog, Szulkin, Sundquist (2010) states that since the mid-1990's an extensive number of studies have shown strong and consistent associations between neighbourhood deprivation and health related behaviours and outcomes, independent of individual socio-economic status. Weden et al. (2010), also state that researchers have identified how economic, social, demographic, geographic, structural and institutional conditions of a neighbourhood come together to influence physical and mental wellbeing. Other factors that can influence physical and mental wellbeing within the neighbourhood are, trust (Prezza, Pilloni, Morabito, Sersante, Alparone and Giuliani 2001), feelings of belonging (Mullan, 2003) and liking the neighbourhood (Ziersch,

Baum, MacDougall and Putland 2005). When grouped together these different terms can fall under the same heading of social capital.

Social capital is characterised by a diverse array of definitions, research and policy applications, but is commonly described as the features of social life-networks, norms and trust that enable participants to act together more effectively to pursue shared objectives (Wood, Shannon, Bulsara, Pikora, McCormack and Giles-Corti 2008; Putnam 1996). According to Leyden (2003), individuals with high levels of social capital tend to be involved politically, to volunteer in their communities and to get together more frequently with friends and neighbours. In recent times social capital has generated a lot of debate. The variability of its definition and use has been criticised as leaving the concept of social capital without distinct meaning or value.

A lack of social capital has been linked to social disorganisation in neighbourhoods (McCulloch 2003). Social disorganisation refers to the inability of residents of an area to regulate everyday public behaviours and physical conditions within the bounds of their community (McCulloch 2003). Signs of social disorganisation may include trouble between neighbours and people hanging around the streets. People may feel uncomfortable in their neighbourhood and only go out when necessary, therefore reducing interaction with neighbours. According to Leyden (2003), spontaneous "bumping into" neighbours, brief conversations or just waving hello can help to encourage a sense of trust and a sense of connection between people and the places they live. This spontaneous bumping into neighbours may be reduced in neighbourhoods with a lot of social disorganisation. Many studies have recognised a decline in social capital (McCulloch 2003; Altschuler, Somkin and Adler 2004; Ziersch et al.. 2005; Prezza, Alparone, Cristallo and Luigi, 2005; Leyden 2003 and Wood et al.. 2008). According to Thomson (2009) some of the reasons for the decline in social capital are the pressures of time and money and the impact of decentralisation of services, suburbanisation and the resultant suburban sprawl has meant that there has been a significant increase in road traffic and car-dependant lifestyles. As the previous studies have stated there is a decline in social capital within neighbourhoods (McCulloch 2003 and Leyden 2003). This decline in the interaction of neighbours may result in an increase of traffic volume within the neighbourhood. This increase in traffic and decrease in interaction may increase parental (Mullan 2003) and children's (Davis 2001) fears about road safety in the neighbourhood.

Ziersch et al. (2005) explored the relationship between a number of elements of neighbourhood life and neighbourhood based social capital. They described neighbourhood social capital as having neighbourhood connections, trust, reciprocity and feelings of safety. Using mixed methods of questionnaires and in depth interviews, 4000 questionnaires were sent out randomly to residents in Adelaide, Australia and from the returned questionnaires forty people were selected randomly for interviews. On the questionnaire participants were asked questions on neighbourhood pollution, social capital (neighbourhood connections, neighbourhood, reciprocity, neighbourhood safety) and trust. Results from this study found that neighbourhood trust is positively affected by age. Older age groups were more likely to think fellow residents could be trusted. They also found that age and gender affected perceived neighbourhood safety, that women had lower levels of perceived safety and older age groups felt less safe around the neighbourhood (Ziersch et al. 2005).

A study by Lee and Moudon (2008) examined if neighbourhood environments are associated with walking and cycling. Using survey data from Washing State in the US and Geographic Information System derived measures of the neighbourhood environment, 608 people were questioned. Participants reported traffic volume to be the most significant barrier and good lighting to be the most important facilitator of walking and cycling. People who were active on a daily basis gave their neighbourhood a high score based on attributes including safety, visual quality, knowing neighbours and the availability of sports facilities parks and bike racks (Lee and Moudon 2008). One of the main findings of this study was that people who engaged in physical activity regularly tended to live in areas with more supportive, social and built environments. As with previous studies a limitation of this study is that it relied on self reported questionnaires.

Research with Children

While there is a clear empirical link between the physical environment and adult's physical activity (Brownson, Chang, Eyler, Ainsworth, Kirtland, Saelens and Sallis 2004, Giles-Corti et al.. 2005 Ewing, Schmid, Killingsworth, Zlot and Raudenbush 2008, Wood et al.. 2008 and Forsyth, Oakes, Lee and Schmitz 2009) there has been much less research with children and how the built and the neighbourhood environment may affect their physical activity and active transport levels. According to Davison and Lawson (2006) one cannot assume that associations between the physical environment and physical activity among adults are applicable to children. Children's physical

activity consists generally of short intermittent bouts resulting from unstructured play rather than organised sports (Bringolf-Isler, Grize, Mader, Ruch, Sennhauser and Braun-Fahrlander, 2010). Children play anywhere and everywhere, often venturing to places where their environmental needs have seldom been recognised (Matthews and Limb, 1999). According to Grow, Saelens, Kerr, Durant, Norman and Sallis (2008) the most studied locations for child physical activity are the school, neighbourhood streets and parks.

Children's Physical Activity, Active Transport & the Built Environment

Research has found that a young person's levels of active transport and physical activity is affected by a wide range of built environment factors such as the lack of street connectivity, lack of or poorly designed footpaths and cycle lanes (Panter et al.. 2008b) and distance to facilities or school (Giles-Corti et al.. 2005a; Nelson, Foley, O'Gorman, Moyna and Woods. 2008). Studies have found that a higher level of physical activity is associated with better sidewalks, higher quality recreational facilities, easier access to recreational facilities (Jago, Baranowski and Baranowski 2006), greater housing density and higher neighbourhood walkability (Lee, Cubbin and Winkleby 2007, Romero 2005, Gomez, Johnson, Selva and Sallis 2004, Powell, Chalopuka, Slater and Johnston 2007, and Kerr, Rossenberg, Sallis, Saelens, Frank and Conway 2006). Panter et al. (2008b) reviewed twenty four studies that examined the associations between the environment (perceived or objectively measured) and active travel among youth aged 5 – 18 years. Results from this review found that youth travel is positively associated with social interactions, facilities to assist active travel and urban form in the neighbourhood as well as shorter route length and road safety (Panter et al., 2008).

Johns and Ha (1999) conducted a study in Hong Kong on the levels of home and recess physical activity in children. They observed 40 children between the ages of six and eight years. The study took place in a densely populated urban environment where the interrelationship of social and physical settings was expected to influence the participants' level and extent of activity. In this study the physical setting was defined as the amount and types of spaces available for children to play and the social setting was defined as the interaction between participants and their supervising adults. They found that children living in an area with limited availability of outdoor play areas during afternoon hours resulted in these children spending 72.4% of their time sitting and lying down and only 10% of their time being active. Johns and Ha (1999) did not

collect information on barriers that may have affected the physical activity levels or information from the parents on how they feel about letting their child play outdoors with their friends.

The availability of recreational facilities, such as swimming pools and playing pitches, as well as walking and cycling trails has a positive relationship with physical activity, though the evidence is mixed (Trost et al. 2002). According to Godin (1994) and Johnson, Corrigan, Dubbert and Gramling (1990) a lack of available facilities are frequently suggested to be a barrier to physical activity participation. Most children and adolescents have considerable time for recreation but they are not able to drive and are subject to restrictions placed on them by adults (Deforche, Van Dyck, Verloigne and De Bourdeaudhuij 2010). Specifically, Deforche et al. (2010) found that lack of traffic danger and better access to recreational facilities is associated with more leisure-time sports and active transport. Adolescents with positive perceptions of certain environmental characteristics such as the presence of places they like to use frequently near their home were more likely to be physically activity (Santos, Page, Cooper, Ribeiro and Mota 2009 and de Farias Junior et al. 2011). The availability of physical activity facilities may be also more highly correlated with physical activity participation among females than males (Brownson, Baker, Housemann, Brennan and Bacak 2001).

Sugiyama, Leslie, Giles-Corti and Owen (2009) found that access to outdoor recreational facilities (parks and sports facilities) and access to places of interest (cafe and local shops) were significantly associated with neighbourhood street use. Facilities such as bikeways and walking trails are also positively correlated with levels of physical activity (Booth 2000). When physical activity facilities are available close by youths may be more likely to utilize them (Giles-Corti and Donovan, 2002; Trilk, Ward, Dowda, Pfeiffer, Porter, Hibbert, Pate 2011). Previous research demonstrates that peoples' perceptions of their accessibility to facilities may be influenced by the convenience of location, cost, transportation and preferred type of physical activity (Trost et al. 2002).

There is limited research available in Ireland about the built and neighbourhood environments and how they affect children and young people's active transport levels. Nelson et al. (2008) investigated if distance is a barrier to active transport among adolescents and if there is a limit on how far they would walk or cycle. They collected

their data between 2003 and 2005 from a cross-sectional cohort of 15-17 year old adolescents in 61 post primary (secondary) schools around Ireland. Data collection consisted of participants self-reporting distance, mode of transport to school and barriers to active commuting. Results from this study found that more males commuted actively than females. They also found that young people who were active commuters only had to travel a short distance to school. Participants in this study also mentioned time was a barrier that affected their decision to walk or cycle to school. A limitation of this study is that Nelson et al. (2008) only examined active transport levels to school. As stated previously participants mentioned time as a barrier, therefore they may be rushing to get to school in the morning but after school they may have more time to walk home.

Apart from affecting physical activity levels, research suggests that poorly built neighbourhood environments may affect the obesity levels in children and young people. According to Grafova (2008), recent evidence suggests that the built environment may influence children's weight, for example children living in sprawling counties are more likely to be overweight than children living in areas with more compact development. Specifically, Grafova (2008) examined the relationship between overweight status of children aged between 5 and 18 and eight built environment factors reflecting population density, street connectivity, urban design, neighbourhood physical disorder and food environment. Both the weight and height of the participants were measured and their body mass index was calculated as weight in kilograms. The interviewer's observations on neighbourhood physical disorder, such as the condition and upkeep of the buildings and street surface on the block were analysed. Results of this study found that living in a neighbourhood with higher convenience store density is associated with a higher probability of being overweight children and adolescents. Living in a neighbourhood where no physical disorder such as the condition and upkeep of buildings and street surface, is observed is associated with a decreased likelihood of being overweight.

Children's Neighbourhood Environment

The neighbourhood is an important setting for outdoor play in children and young people. According to Carver et al. (2008b) there is evidence to suggest that the time children spent outdoors is a strong determinant of overall physical activity. Perceptions of the neighbourhood environment are also important determinants (Alton, Adab,

Roberts and Barrett 2007), particularly a fear and dislike of local environments (Lorenc, Brunton, Oliver, Oliver and Oakley 2008) and parents perceptions of the local environment (Bringolf-Isler et al. 2010).

Alton et al. (2007) is one of the few studies that is focused on how perceptions of the neighbourhood affects walking rather than general physical activity. The overall aim of this study was to examine the relationship between frequency of walking trips, perceptions of the local environment and individual travel preferences in children. Using six primary schools in Birmingham UK, Alton et al. surveyed 473 children about 1) socio-demographic information 2) walking frequency in the past seven days and 3) children's perceptions of the local environment. Questionnaires were handed out to 579 children and 473 were given permission from their parents to participate. Results from this study found that 41.9% of children surveyed were high walkers. High walkers were children who walked more than the mean number of walking trips which was 20.1 in seven days. The most common place they walked to was the local shops. A third of participants surveyed rated their neighbourhoods as having heavy traffic and dangerous roads. When asked what their preferred method of travelling to school was 36.4% said walking, 33.8% said cycling, 26% said the car while only 3.4% said that they preferred to take the bus. A limitation of this study is that it is subject to recall and self-report biases.

Similarly, Santos et al. (2009) looked into associations between perceived attributes of the neighbourhood environment and adolescents' physical activity. This study was conducted in I´lhavo Portugal. Their population sample was students from all public schools in the area, three middle schools aged between 12 and 18 years and two high schools aged between 12 and 21 years. Participant's physical activity levels were measured using a self report questionnaire. Their neighbourhood environment perceptions were assessed using the Environmental Module of the International Physical Activity Prevalence study. Results from this study found that compared to boys physical activity levels girls were classed as low active. In relation to their neighbourhood environment adolescent girls who perceive their neighbourhoods to have free or low cost recreational facilities and boys who perceive people being active in their social environment were more likely to be in the active group. Strengths of this study include the gender difference comparison but a limitation of this study is that they

only focused on one area which according to Santos et al. (2008) may not represent Portugal as a whole so results may differ in different areas of the country.

Page, Cooper, Griew, Davis and Hillsdon (2009) investigated whether independent mobility in boys and girls was related to objectively measured physical activity. They recruited 1307 children from 23 public primary schools within a large UK city. Participants completed a computerised self-report physical activity questionnaire and wore an accelerometer for seven days during waking hours. Results of this study found that parents were more likely to let their children visit local destinations unsupervised, such as friend's houses, parks, local shops and schools, than facilities that were further away (Page et al., 2009). They also found that children who reported being allowed to visit destinations unsupervised had higher levels of weekday physical activity. The main limitation of this study was the reliance on self-reported independent mobility (Page et al., 2009).

Compared with previous generations research has found that children spend less time playing outdoors and that the sight of children running errands in the neighbourhood, meeting friends, or playing informally has become an increasingly uncommon sight (Carver et al. 2008). Reasons for this may be due to parents chauffeuring their children to and from school and other places such as structured activities limiting the amount of time that children get to spend outdoors (Carver et al. 2008).

Karsten (1995) distinguishes different patterns in the relationship children have with their neighbourhood. Participants in her study were "former children", that is adults who were brought up in a particular street and "older neighbours", that is persons who have a long history of living in a particular street and who knew about different periods in the past and present situation. Children and their parents currently living in the neighbourhoods were also interviewed. All were interviewed and asked questions about their neighbourhood. Through her research, Karsten was able to identify three types of children: 'inside children', 'outside children' and 'backseat children'. Inside children can be defined as children who rarely play outside or if they do go outside it is only for short periods at a time. They play indoors and do not participate in many other activities. Outdoor children are children who play outside all the time, and Backseat children are escorted to adult organised activities such as sports lessons, or music lessons (Karsten 1995). Karsten (1995) found that children's time space behaviour in

the 1950's and 1960's can be roughly characterised by one type namely outdoor children, this differs greatly from children of today. Many other factors that may contribute to this lack of children playing in the neighbourhood include road safety, having no safe places to play and 'stranger danger' (Davis 2001)

Safety Concerns

Concern about Strangers

Many studies have found neighbourhood safety such as crime and traffic safety such as speeding cars as the most common barriers to active transport (Collins and Kearns 2001, Prezza et al. 2005 and Carver et al. 2008). According to Mullan (2003) safety fears about road safety can result in a reduction in play, cycling and walking activities among children and young people.

The marginalisation of children and young people within cities and in urban planning means that parks, streets and pedestrian areas have become sources of danger to the very groups which most need to access them (Davis and Jones, 1997). Within the local environment sources of dangers that children may remain vulnerable to include air pollutions, traffic danger and stranger danger (Matthews and Limb 1999). According to Humpel et al. (2002) perceived safety is also associated with factors in the physical environment, such as, inadequate street lighting, poorly maintained footpaths, dangerous traffic and unattended dogs. The absence of walkable public places such as streets, squares and parks, means that people of diverse ages, races and beliefs are unlikely to meet and talk (Wood et al. 2007).

According to Thomson (2009) children are discouraged from speaking with adults who are seen as strangers. Hillman (2006) defines strangers as adults not known to children. This discouragement results in a disconnection from our neighbourhoods, which in turn results in fewer familiar faces and interactions between people who live nearby. Parents who are actively engaged with their neighbours and their community were more likely to associate the benefits of giving their child independence with their growth and maturity.

There are multiple manifestations of 'stranger danger' such as unwelcome approaches by strangers, abduction, assault, molestation and even murder (Carver et al. 2008). In 1999, Hillman found that parents are increasingly worried about the "outside world" as

it can be seen as a place where children are likely to be injured by a motor vehicle, or harmed by a bully or stranger. Due to this parents are restricting the amount of time that their children can spend outdoors. Lee and Rowe (1994) cited in Dixey (1999), found that being approached by a stranger was ranked third (behind smoking and bullying) as a potential risk perceived by 10-12 year old children on their way to school. This shows that parents and children may have different views when it comes to stranger danger. Although, a child is more likely to be assaulted by a family member or acquaintance random assault by a stranger is feared more (Carver et al. 2008). Research is needed into how children perceive strangers and if their perceptions are similar to their parents.

One of the most common fears to limit the amount of active transport in children and young people is 'stranger danger' (Timperio et al. 2004 and Carver et al. 2008) but safety worries about where children are active can also affect their active transport levels. According to Matthews and Limb (1999), several studies reveal that children who are old enough to go outside their home unaccompanied spend a lot of time on the pavements, streets and other areas of their immediate neighbourhood. Children use these different types of settings as meeting places where they can hang out and relax with friends (Matthews and Limb 1999). These meeting places can be viewed as problem areas due to vandalism and younger children being afraid to use parks due to older children hanging around as found by Davis and Jones (1997).

Davis and Jones (1997) looked into how children spend their leisure time, how they use their local areas, what activities they value, how they travel and how they view their quality of life. At the time of this study there was not much information available about the interests and aspirations of children and young people and their views on independent travel. Results from this study found that parks and playgrounds were viewed as problems because of vandalism, fear of theft of bicycles, dog dirt and the physical difficulty of accessing parks due to motor traffic (Davis and Jones 1997).

In 2001, Davis recruited 492, 9-11 and 13-14 year olds from Birmingham in the UK, to complete a semi-structured questionnaire and take part in a focus group. Davis found that parental restrictions, because of fear of traffic, "stranger danger", and bicycle theft, limited range of travel from home in 9-11 year olds. In 13-14 year old participants traffic danger was seen as a barrier to independent mobility. Results from this study are

consistent with newer research such as Lubans, Boreham, Kelly and Foster (2011). According to Davis (2001), there is now considerable evidence that children's and young peoples' needs are somewhat overlooked by adults needs, that children and young people have to "fit in" and "make do". This can be backed up by Karsten (2005) who stated that over time public space has been transformed from a space that belongs to children (child space) into one meant for adults and accompanied by children only.

According to Karsten (2000) the 'space that belongs to children' or the areas where children play are now being seen as places that may have a negative affect on active transport due to reasons beyond the control of children and young people. There is little research available that shows how living in a neighbourhood that is perceived to be dangerous affects a child or a young person's health. Visible evidence of physical disorder in the form of graffiti, litter and vandalism may trigger negative emotions and fear of crime and in the long term neighbourhood signs of crime could potentially lead to chronic anxiety and depression.

Davis and Jones (1996) undertook a study that focused on building an understanding of children's and young people's perceptions of risk and patterns of decision making on transport. The study was undertaken in four Birmingham schools, two primary and two secondary. Research was conducted in two stages. The first stage was a semi-structured questionnaire that was administered to all the participants and completed in a timetabled lesson. The second stage was a focus group. Six to eight children from all classes in the year group were formed to make the focus group. Results found that 43% of respondents across all the schools reported that they did not feel safe in their area or that traffic is bad and it was dangerous crossing roads. The focus groups also found that the everyday experience of seeing adults "being lazy" for example by driving short distances to the local shops, influenced children's attitudes. Research shows that children and young people's activity choices are limited by fears of strangers, evidence of vandalism and danger from traffic, (Davis and Jones 1996; Reading, 2006; Hillman, 1999 and Dixey, 1999).

Concern about Road Safety

McMillan (2005) believes that the influence of perceived and actual traffic safety on parents' decision making may vary depending on the perception of control that parents feel they have over the child's behaviour e.g. through the presence of other individuals

walking to school with the child or education on walking safely. Timperio et al. (2004) compared parent's and children's perceptions of road safety and found that parental rather than children's perceptions of road safety had stronger associations with children's walking and cycling in the neighbourhood. This may suggest that parents' influences may control children's travel behaviours (Carver, Timperio, Hesketh and Crawford 2010). According to Hillman (1993) traffic in the neighbourhood could be the single most important impediment to children and young people's range, play patterns and independence. Davis (2001) found that in a group of 14 year olds traffic danger was stated as a barrier to independent mobility especially cycling. This was their justification given for cycling on the footpaths (Davis 2001).

Another relevant factor that has been found to influence physical activity levels and links in with road safety is the volume of traffic and the speed of traffic (Mullan 2003 and Huttenaoser 1995). Streets with low traffic speeds and volumes have been found to have more indicators of a better quality of life – these indicators include more street activity, more signs of street care (e.g. flower boxes) and more open windows (Mullan 2003). Perceived traffic safety is most strongly correlated with adolescents' walking and cycling to recreation facilities (Grow et al. 2008). Parental worries may also affect the walking and cycling habits of children and young people. According to Hillman (2006) children are totally reliant on walking and cycling for getting about on their own or with friends and that the priorities attached to this have resulted in a traffic environment in which death or injury on the roads is far more likely than if they were in a car or bus. This may be one of the main factors that influence parents' decisions on whether or not they let their child travel independently.

Parental perceptions of issues regarding safe pedestrian cycling conditions (e.g. the need to cross several roads to reach destinations and a lack of lights or crossings) were negatively associated with 10-12 year old children's walking or cycling to local destinations (Timperio et al. 2004). Parents who perceive their neighbourhood to be unsafe tend to drive their children to various destinations therefore reducing the child's ability to learn how to walk or cycle safely in traffic. Due to this fear of traffic, parents fears have led to children's days becoming structured by adults. According to Hillman (2006) this may send out a message to children that their neighbourhoods contain elements of danger that their parents feel they should not be exposed to. An example of this would be that parents may consider people that their children do not know as

untrustworthy and that it could be dangerous for their children to engage in conversation with them.

This lack of trust by parents within the neighbourhood may limit the amount of time that children get to spend outdoors. In neighbourhoods that are not free from traffic or when cars do not drive slowly through a neighbourhood, parents will not allow their children to play outside alone (Huttenmoser 1995). A recent review suggests that physical factors in the neighbourhood, such as access to facilities and the presence of sidewalks and controlled intersections, are positively associated with children's physical activity (Hume, Salmon and Ball, 2007). Other factors that may be associated with physical activity are number of roads to cross, traffic density and speed and local conditions such as crime and area deprivation (Davison and Lawson 2006). According to Hume et al. (2007), having peers to 'hang out with' locally was positively associated with walking and cycling among Australian boys and girls.

Dellinger and Staunton (2002) analysed results of the National Healthstyles Survey in the US. They found that long distances and dangerous motor vehicle traffic were the most common barriers too walking and cycling in primary and secondary school aged children. From a sample of 3550 households it was found that primary school aged children reportedly faced barriers of traffic danger and crime danger significantly more than their older peers (Dellinger and Staunton 2002).

Negative perceptions of a neighbourhood environment may be positively associated with physical activity and walking frequency. Hume, Salmon and Ball (2007), girls who agreed that there was a log of graffiti in their neighbourhood walked more frequently than girls who disagreed, whereas boys who perceived lots of litter and rubbish were more active than other boys. This finding by Hume et al. (2007) is supported by Romero, Robinson, Kraemer, Erickson, Haydel, Mendoza and Killen (2001) who found that children who perceived greater neighbourhood hazards were more active than those who perceived fewer hazards. Overall disordered neighbourhoods may inhibit children and adolescents from engaging in physical activity, both because of the lack of safety of playing sports or games in the neighbourhood and because of their exposure to criminal activity when travelling to or from recreational activities within or outside the neighbourhood (Molnar, Gortmaker, Bull and Buka, 2004).

Summary

This review of literature has highlighted how children's and young people's physical activity and active transport levels are affected by a wide range of built environmental-level factors such as the perceived threat from traffic (Page et al. 2009), lack of street connectivity, lack of or poorly designed footpaths and cycle lanes (Panter et al. 2008), neighbourhood safety (Carver et al. 2008), parental restrictions due to stranger danger fears (Davis, 2001), distance to facilities or school (Giles-Corti et al. 2005; Nelson et al. 2008), road safety (Grow et al. 2008), perceptions of their local environment (Alton et al. 2007), particularly fear and dislike of local environments (Lorenc et al. 2008), and their parents perceptions of the local environment (Bringolf-Isler et al. 2010).

There is research available regarding parents fears about traffic safety and crime safety within their neighbourhood (Timperio et al. 2004 and Carver et al. 2008) but there is little research available into how these fears affect children and young people. Limited research is also available into how much freedom children and young people actually have. Some studies found that children in secondary school tend to have more freedom to walk and cycle more than primary school children (Dellinger and Staunton (2002).

A Conceptual Framework For Research

A Social-Ecological perspective is very useful for linking these factors together into a coherent framework for research and to conceptualise the different levels at which they operate. Using such a framework McMillan (2005) created a conceptual framework (Figure 2) that draws out the complexity of the relationship between urban form and a child's trip to school. This framework moves the research on travel behaviour forward by (1) identifying the key decision maker of children's travel behaviour, (2) highlighting factors that may be considered when making decisions about a child's trip to school, and (3) outlining how these factors influence the relationship between urban form and the child's trip to school (McMillan 2005). The framework assumes that up to a certain age, the final decision about the trip to school is most often made by the parents or caregivers in the household, not the child. Therefore, that decision is not limited to the schedule, constraints, or thoughts of the child but is influenced in large measure by those of the parents or caregivers (McMillan 2005).

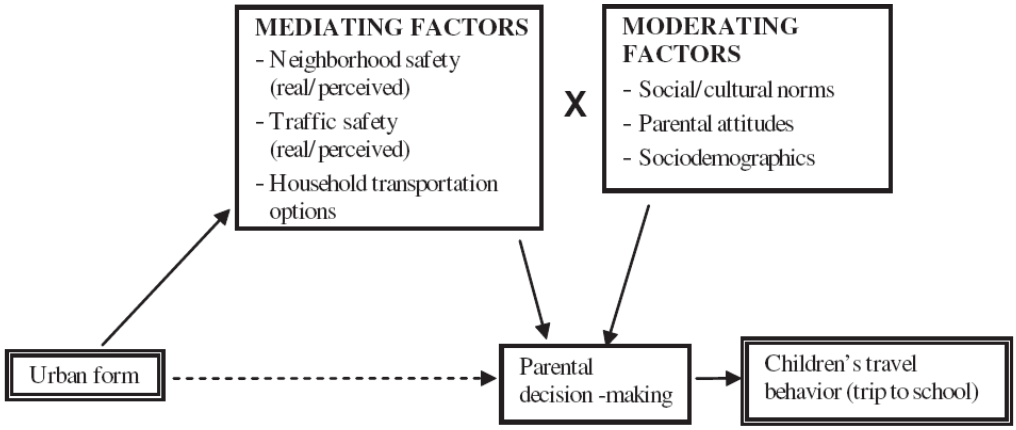


FIGURE 2. **Diagram of the Conceptual Framework of an Elementary-Aged Child's Travel Behavior**
NOTE: Solid arrows indicate hypothesized direct relationships, dotted arrows highlight hypothesized indirect relationships, and X indicates the interaction between mediating and moderating factors.

Figure 3: McMillan (2005) Diagram of the Conceptual Framwork of an Elementary Aged Child's (6-12 years) Travel Behaviour

Panter, Jones and Van Sluigs (2008) also used a multi- level and social ecological approach to explain young people's peoples active travel behaviour which included environment perceptions and individual factors for both parents and children. Figure 3 shows their conceptualisation of the main factors involved in a child or adolescent's decision to walk or cycle to a destination or to travel inactively (by car). Whilst McMillan (2005) uses just urban form as a core element of her framework, Panter, et al. (2008) list a broad range of environmental characteristics that may affect children's active travel.

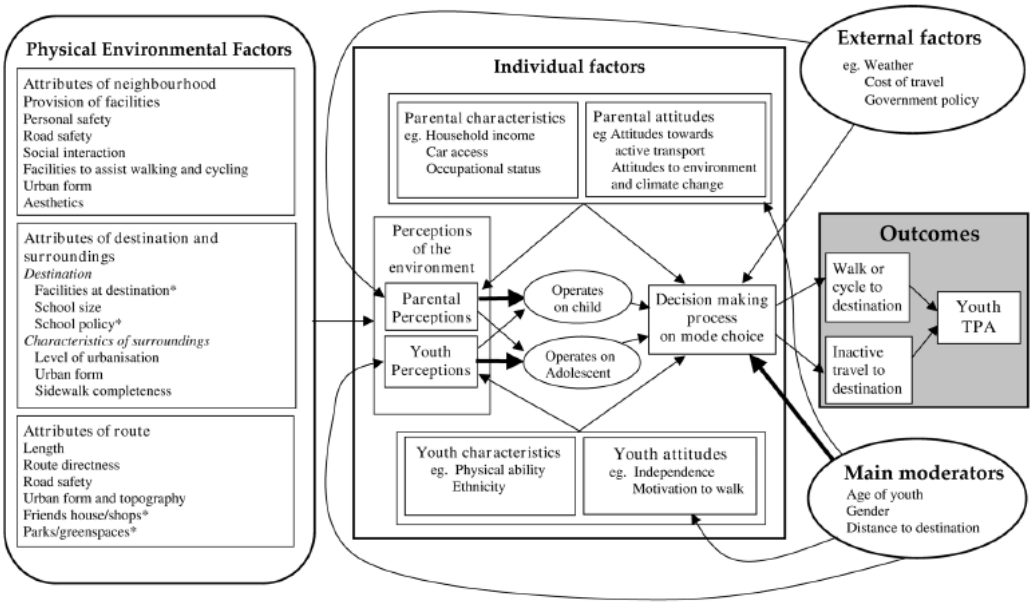


Figure 1
A conceptual framework for the environmental determinants of active travel in children. * Not studied in relation to active travel behaviour in children. TPA = Transport-related Physical Activity. Arrows indicate a hypothesised direct relationship. Larger thicker lines indicate a stronger hypothesised direct relationship.

Figure 4: Panter et al. (2008) Conceptual Framework for the environmental determinants of active travel in children

Using these different frameworks as a template, a conceptual framework for this research (see Figure 4) has been designed to show how the four main areas, Built Environment, Children's Perceptions, Neighbourhood Environment and Parent Perceptions all link together and have different effects on children's active transport habits.

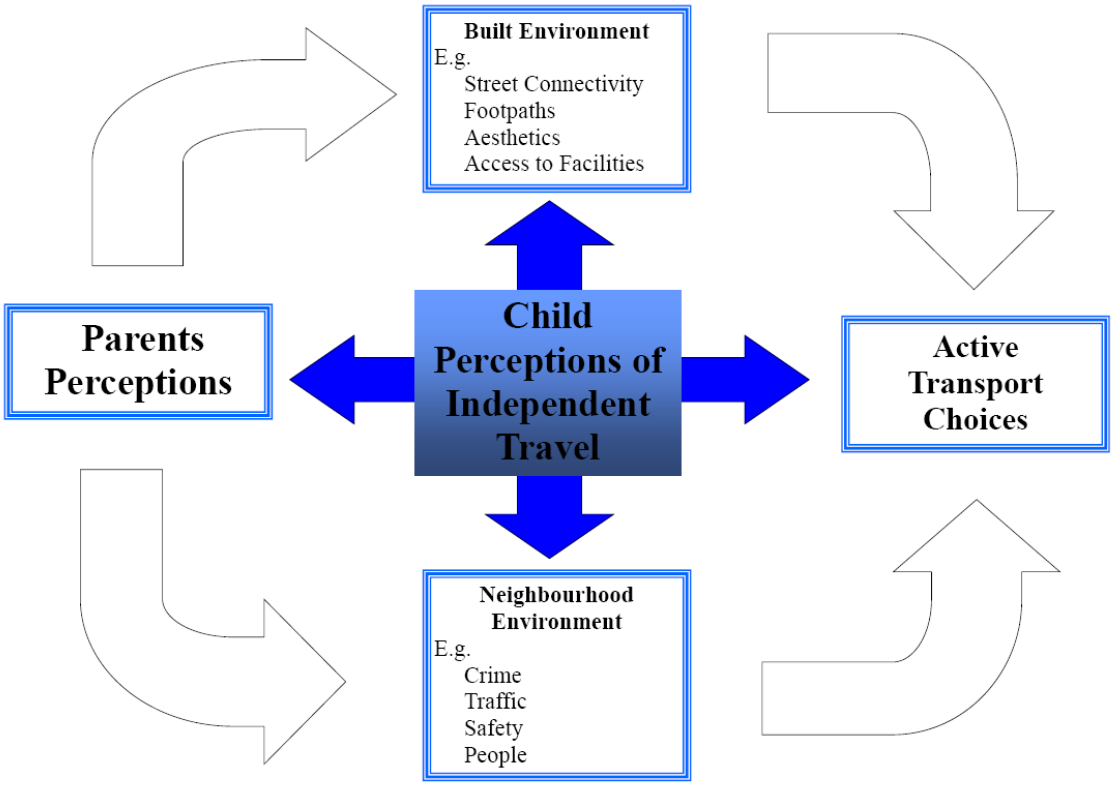


Figure 5: Conceptual Framework Model for Active Transport Choices in Children and Young People

Conclusions & Rationale for Research

Children's and young people's physical activity and active transport levels have decreased dramatically in recent decades. Research is plentiful regarding the influence of the built environment and neighbourhood perceptions in relation to adults but there is insufficient research available into how these factors may affect children and young people's independent travel behaviours. In addition, there is little research is available in Ireland about the barriers and attitudes of children and young people towards independent travel. There is limited research into the age at which children and young people feel they should be allowed to walk and cycle alone. Dellinger and Staunton (2002) are one of the only studies that show a comparison between primary and secondary school aged children. This study aims to look at how old children and young people feel they should be allowed to walk and cycle at alone. There is also limited research available on the nature of parental influences on the independent travel and active transport choices of children and young people.

Overall, the aim of this study is to investigate how the design of the neighbourhood, parents' fears or worries about traffic/strangers etc., and children's perceptions of their

neighbourhood influence where they play and the amount of independent travel (walking and cycling) that they take part in. A conceptual framework (see figure 5) will be used to structure the research focus.

Specifically this research will address the following questions:

1. What are the most common modes of transport to various locations?
2. How are built environment factors (street connectivity, footpaths, aesthetics) associated with active transport among children and young peoples? *(Mitchell, Kearns and Collins 2007, Wood et al., 2007, Romero et al. 2001, Molnar et al. 2004, Carver et al. 2008)*
3. How much freedom do young people think they should have to travel independently and from what age do they think this should start?
4. How are neighbourhood factors (crime, traffic safety) associated with active transport among children and young people? *(Carver et al. 2007, Hume et al. 2007, Hume et al. 2008, Carver et al. 2008*
5. What influences parents' decisions to allow their child to walk or cycle?

Chapter 3: Methodology

Methodology

This chapter outlines the research methodology, including the phases of research, the design of data collection methods, the sampling procedure, and methods of data analysis.

Location of Study

This study was conducted in various locations around Waterford City and County in 2010, in order to access young people from urban, suburban and rural areas.

Research Design

This is a mixed methods study that used questionnaires, environmental audit, interviews and workshop based group data collection. Combining the qualitative and quantitative data helped to deepen the understanding of the thought processes, attitudes and motives of the participants. Data collection methods and sampling decisions were informed by a pilot study.

Pilot Study

The pilot study was completed in order to see which data collection methods would work best in terms of data quality and comprehensibility of questions and which questions would best capture perceptions of the built environment and social capital.

Sample and Procedures

Participants chosen for the pilot study were children aged between 8 and 12 years and their parents from the town of Portlaw Co. Waterford and from a local swimming pool in Waterford city. Portlaw was chosen for the pilot study as it is a small fairly compact rural town with a mix of residential settings – on street housing and housing estates (semi-detached and detached bungalows). Portlaw also has facilities such as a school, shops and community centre within walking distance of many of the houses. The city swimming pool is my place of work and runs regular swimming lessons for children.

Participants were chosen from two different locations in Portlaw: the first a hurling field during a training session and the second a primary school. Nine child participants at the hurling field received the Children's Questionnaire (see appendix D). Thirteen parents at the swimming pool received Parental Questionnaire Version 1 (see appendix E). A review of the questionnaires was undertaken when they were filled in. Parents who received the questionnaire at the swimming pool were invited to attend a focus

group to discuss in more detail their perception of their neighbourhood. Thirteen people agreed, however in the end nobody turned up at the given date and time. Unstructured house to house calls, emails, and telephone calls to parents were completely unsuccessful in this pilot study. Parents said they did not have the time to be involved in the study. Attempts to conduct focus groups and interviews with parents to elaborate more on their questionnaires were also unsuccessful.

The first round of data collection showed that changes were needed in both the questionnaires. A review of the parental questionnaire showed that the questions did not fully capture perceptions of their neighbourhood and the built environment. The first set of questions asked parents about liking their neighbourhood etc. These questions gave parents a chance to add more to their answer but they only answered with yes or no. Therefore the answer format was changed to a likert scale instead. Some young people found the walkability audit difficult to understand due to the lack of clarity with some of the questions. This lack of clarity was due to various points under each question that confused participants. Some questions were rephrased so that they clearly stated what was being asked and the answer format was changed to a yes/no format so that it could be filled in quicker. Appendix F shows the updated questionnaire.

The revised questionnaires (questionnaire version 2) were then given out to 57 pupils in 3rd, 4th, 5th and 6th classes in Portlaw National School (age 8-12years) during class time. Fifty four completed questionnaires were collected during the following week. The pupils were asked to bring the questionnaires home with them in order for parents to fill out the parental questionnaire. Twenty four parents indicated on the questionnaire that they would be willing to do a follow up phone or face to face interview call to discuss the issues raised in the questionnaire further, but despite numerous attempts by phone and email no parent could be contacted for either.

Results

Data collected from the school children and their parents found the following:

- 48.1% of parents were concerned about stranger danger in their neighbourhood,
- 56% were worried that their child might be assaulted
- 63.4% felt that it was not safe for their children to walk home after dark
- 69% were concerned about heavy traffic in the area
- 69% also felt that people drove too fast
- 54% felt their neighbourhood is a safe place for their children to play or hang out in
- 71% thought it was safe to cycle around their neighbourhood during the day

Most children walked to school, the local shop and their friends house (n=27, 21,19) on a daily basis, however the car was the primary mode of transport for going to mass, visiting relations, and going to sports (n=38, 27, 28).

Conclusion

After completing the pilot study it became clear that the school setting was not an ideal place to conduct this study as there was no opportunity for children and young people to express their views and feelings about walking and cycling for transport and there was no opportunity for me to further explore their thoughts. The questionnaires were handed out to the children during class time and it became clear from some teachers that they did not want too much of their class taken up with non-curriculum work. It was decided that a less structured setting (classroom, n=30 sitting at desks) such as youth groups would be a more suitable place to gain access to the children and young people. This setting would allow a more interactive discussion of active transport and perceptions of the neighbourhood.

Main Study

Population and Sampling

Participants were children and young people, male and female, aged between 8 and 18 years who are members of or attending six Foroige Youth Groups and/or afterschool programmes in Waterford City and County and their parents and youth leaders. The youth groups were chosen from rural and urban areas of Waterford.

Setting	Description
Ballyduff	Rural
Kilmacthomas	Rural
Johns Park	Urban
Childcare Centre	Urban
Ferrybank	Urban
Dunmore Road	Urban

Table 1: Locations of Participants

Measurement Tools

Methods used to collect data were as follows:

1. Questionnaires
2. Walkability Audit
3. Workshop
4. Interviews

1. Questionnaires

There were three different types of questionnaires: 1. a neighbourhood questionnaire for children and young people, 2. a travel questionnaire for the children and young people and 3. a perceptions questionnaire for the parents.

1. ***Children's Neighbourhood Perceptions Questionnaire*** – This was adapted from a walkability checklist called How Walkable is your Community? (See Appendix G:www.walkableamerica.org). Its purpose was to establish what children and young people felt about their neighbourhood and specifically if they thought it was a nice place to live and walk and whether they felt safe. It comprised of four multiple choice questions about neighbourhood walkability, safety, driver behaviour and whether the

neighbourhood is a nice place to live. Each question had a "yes" and a "no" answer but the "no" answer had a selection of answers. An example of one of the questions can be seen below. Participants ticked all that applied to them and it took approximately five minutes to complete.

Do you have room to walk?

Yes___ No___ the... (Please Tick)

____Footpaths start and stop
____Footpaths are broken or cracked
____Footpaths are blocked by poles, signs, bushes, bins etc
____No Footpaths
____Too much traffic
____Something else

2. ***Travel Questionnaire –*** Participants were asked to tick the most common form of transport (walk, cycle, parents car, friend's car and bus) that they use to travel to school, shops, friend's house, mass, relations/family houses and different sports. The options were laid out in a grid. This took less than five minutes to complete (see Appendix H)
3. ***Parental Neighbourhood Perceptions Questionnaire*** – This questionnaire was for participants' parents and youth leaders. The aim was to find out their perceptions of their local neighbourhood. It was adapted from Carver, Timperio and Crawford, (2008). See Appendix I for original questions. It comprised 16 statements about the following three issues: perceptions of the neighbourhood, child safety, crime levels within their neighbourhood.

Changes were made to four questions. The first change was to remove the reference to a train stop in the following question "my child would be safe walking home from a bus stop or train stop at night." The second change added dog dirt to a question on litter. In the third change was the word "block" was changed to "area" and in the forth change the wording "there are no lights/crossings for my child to use" was changed to "my neighbourhood has safe places to cross the road". Three extra questions were

added to broaden the questionnaire: "There is danger from unsupervised dogs," "In general, drivers in my area drive too fast" and "My neighbourhood has parks/greens where kids can play". The answer format ranged from strongly agree to strongly disagree. The questionnaire was similar in content to the children's questionnaire, but with more specific questions on "stranger danger" and neighbourhood characteristics. It took five minutes to complete this questionnaire.

2. Walkability Audit

A walkability audit is an evaluation of the walking environment in a specific area and its general purpose is to highlight issues with regard to safety, access, comfort and convenience that might reduce walking, cycling and outdoor play activities (www.walkinginfo.org). It is conducted outdoors. See Appendix J for original audit and Appendix K for audit used in the study.

The audit was conducted during the workshop and consisted of six questions with statements underneath. The audit was adapted from Walking with a Purpose from the website www.idph.state.ia.us/iowansfitforlife/common/pdf/walking_with_purpose.pdf. As stated previously the answer format was changed to yes/no instead of detailed answers. The audit took about 15 to 20 minute to complete.

Do you have room to walk?	**Yes**	**No**
Are there footpaths present?		
Are the footpaths broken or cracked?		
Are the footpaths blocked by poles, signs or trees?		
Do footpaths lack ramps for buggies or wheelchairs?		
Are there cars blocking the footpath?		

3. Workshop

The aim of the workshop was to involve children and young people in exploring and discussing independent travel by foot or by bicycle, how the built environment and their perceptions of the area in which they live affected this and what they think could be improved. This was done through the use of games and activities done either individually or together because it is not feasible to conduct individual in-depth interviews with children and young people.

Workshop activities included brainstorming sessions, discussions, picture making, walkability audit, games and photographs. These are outlined in more detail below. See Appendix L for workshop layout.

Brainstorming

The workshop started with a brainstorming session in which each group was asked to call out different words that they associated with walking and cycling. The data was recorded on flip chart sheets.

Photographs

During the walkability audit, the children and young people were asked to point out things that they saw as barriers of or facilitators to walking and cycling around their neighbourhood.

Picture Activity

Participants were asked to draw either "A: what comes to mind when you think about walking and cycling" or "B: a neighbourhood that they is good for walking and cycling". Parents had given consent to their children's pictures being used anonymously in the final write up of the research paper.

Discussion

This comprised of reactions and responses to statements taken from Santos, Page, Cooper, Riberio and Mota (2009). These statements were as follows:

- I see many people being physically active in my neighbourhood
- The crime rate in my neighbourhood makes it unsafe to go on walks in the day or in the night
- There is so much traffic that makes it difficult to walk or cycle
- My neighbourhood has lots of recreation facilities
- There are many interesting things to look at while walking in my neighbourhood

Final Round

The very last thing participants were asked to do was to give a one word answer to the following statement: "I think my neighbourhood is...."

4. Interviews

The final method of data collection involved talking with parents and youth leaders. The aim was to get them to discuss and explore how they decided whether or not to leave their child(ren) walk or cycle to various locations. Emails were sent out and phone calls were made to parents. Attempts were also made to contact parents for either a mini focus group or a one to one "chat".

Ethical Considerations

Permission for the research was given by the Foroige Executive in the Waterford area after Waterford Institute of Technology clearance. Permission was also granted by the various different youth groups that participated in the study.

However, in order for any young people to take part in the workshop, their parent/guardian must have given signed consent for them to do so by signing the front page of the parental questionnaire and returning it to me (via the child). Children and young people were also asked to fill in a consent form at the start of the workshops stating that they understood what was going to happen in the workshop and that they knew that they were under no obligation to participate and that they could leave it when they wanted to, freely and without question (See Appendix A, B and C for the letter that was sent to parents and the consent forms). Similarly, volunteers were sought to complete the walkability assessment and participation was not compulsory. All information gathered was kept strictly confidential and was only seen by the researcher. No names were used during the write up of the study.

Procedures

Once permission to conduct the study was granted phone calls were made to the leaders of all the Foroige groups informing them about the study and asking them for permission to conduct a workshop with their group. If a leader expressed interest in participating in the study information was emailed to them explaining in detail the various different sections involved in the workshop.

Youth leaders were present throughout each workshop and the group was informed that the workshop was voice recorded. Prior to each workshop parents were given an information sheet containing all the information about the workshop and its activities and they gave their informed consent for their children to participate. A lesson plan for the workshop is outlined in Appendix L.

Stage One: Questionnaires

Once dates for the workshop were finalised, questionnaires and informed consent forms were handed out to the participants at the youth group venue one week in advance of the workshop. This was completed in advance of the workshop in order to give parents a chance to enquire further about the study or the workshop if necessary.

Stage Two: Workshop

At the start of each workshop the questionnaires and consent forms were collected from each participant and each participant was asked to sign their own consent form. This indicated that they understood what was going to happen during the workshop and that that it was being voice recorded.

The first activity of the workshop was a brainstorming activity that lasted 5 to 10 minutes. This was followed by the walkability audit. This lasted approximately 15 to 20 minutes. The procedure for this varied depending on the size, age and location of the group. If the group was small (4 to 6 participants) then everybody in the group was asked to complete the walkability audit and the pictures. Participants for the audit were chosen by the youth leaders in order to get the most reliable people to conduct the audit. In order to minimise the risk of accidents participants were asked to state what they think a photo should be taken of and either myself of the youth leader went there and took the photograph. A larger group meant that some were chosen to complete the audit while the rest did picture activity "B" in pairs. Participants in the younger groups were asked to draw picture activity "A". The picture activity also lasted 15 to 20 minutes.

After the audit and picture session came the discussion round that lasted approximately 25 to 30 minutes. During the discussion section participants were asked questions about their neighbourhood and independent travel.

In the final part of the workshop the participants were asked to complete the following sentence "I think my neighbourhood is..." with one word. This lasted approximately five minutes.

Stage Three: Interviews/Phone Calls and Emails

Parents were asked in the questionnaire if they would be willing to take part in a focus group or a one to one interview to discuss how they made the decision to let their child

walk or cycle to various locations. All those that agreed were contacted to arrange a suitable time for data collection.

Data Analysis

Quantitative

Analysis of quantitative data was carried out using SPSS and Excel. Descriptive statistics, frequencies and/or percentages were calculated for all questions.

Neighbourhood Questionnaire

This questionnaire was analysed in Excel. For the questions on "do you have room to walk, and is it easy to cross the road?" pie charts were used to show the frequency of the answers given. Tables were used to present the responses to the question "is your neighbourhood a nice place to live and do drivers behave well".

Independent Travel Questionnaire

Graphs were created in Excel to show two pieces of information:

- The most popular form of transport used by children and young people
- The most popular form of transport used by children and young people to various different locations

Parents Perceptions Questionnaire

Frequencies and percentages were obtained from SPSS and Excel to create pie charts. Information was presented under six categories:

- ***Safety in the community*** E.g. Q3 Stranger danger is a concern of mine
- ***Barriers*** E.g. Q1 There are barriers to walking and cycling in my local neighbourhood that make it hard for my child to get from place to place e.g. major roads
- ***Traffic*** E.g. Q6 There is heavy traffic in our local streets
- ***Safe for children*** E.g Q8 My neighbourhood is a safe place for my children to hang out
- ***Speeding*** E.g Q10 People drive too fast in my neighbourhood
- ***Crime*** E.g Q12 There is a high crime rate in my neighbourhood

Walkability Audit

Bar charts were created in Excel for each data collection setting to show the percentage of yes and no responses to beliefs about footpaths, pedestrian crossings, aesthetics and cyclists/walkers.

Qualitative

Workshop

All discussions were transcribed and thematic content analysis was used to analyse the data from the children, young people and their parents. This is the process of identifying common themes throughout the text and classifying them into codes. Coding is the process of combing the data for themes, ideas and categories and then marking similar passages of test with a code label so that they can easily be retrieved at a later stage for further comparison and analysis (Gibbs and Taylor 2005). The codes were pre-defined by the research questions. The transcripts were searched specifically for statements that were related to each code and each was given a different colour for the breakdown of themes). The codes were barriers, freedom, perceptions and knowing your neighbours. Coding was done by hand using coloured markers. There was overlapping with various codes having similar answers and the codes were narrowed down to three main themes:

- Barriers
- Independent Travel and Freedom
- Perceptions of the Neighbourhood

Brainstorm and Final Round

Both involved one word responses to statements. Words with similar meanings were combined together into common themes. See appendix N for the list of words that were grouped together. The final lists of common themes were illustrated by a spider diagram from the website www.mindomo.com.

Pictures and Photographs

Pictures A and B were analysed separately. Pictures A were grouped together by similarity of content, e.g. people smiling. Those whose content was very unclear were not included. Pictures B were described individually as there was very few of them. The photographs were also grouped together into common themes by combining those with similar themes together. Examples of pictures are given and spider diagrams from the website www.mindomo.com are used to illustrate the photograph themes.

Chapter 4: Results

Results

Sample (Children)

Twenty three males and twenty one females aged from 6 to 15 years old participated in the workshops and 166 children, young people and their parents returned questionnaires. Table 2 shows the number, age and sex of participants by data collection site.

Table 2 Participants' Gender, Age range and Number by data collection site

Site	No. of Participants	Male	Female	Age Range
Ballyduff	10	5	5	12-15
Dunmore Road	0	0	0	10-12
Ferrybank	6	5	1	9-12
John's Park	8	4	4	12-15
Kilmacthomas	5	2	3	11-15
Portlaw	0	0	0	8-12
Waterford Childcare Centre	15	7	8	6-12
Total	**44**	**23**	**21**	

Table 3 shows the breakdown of returned questionnaires from participants and their parents. Nine children's questionnaires were received from one group which did not participate in the workshop. The 127 children and parent questionnaires that were collected from Portlaw National School during the pilot study were subsequently used in the main study as the questionnaire remained the same.

Table 3 Source and number of returned questionnaires from children, young people and adults and their gender

Site	No. of Child Questionnaires	Male	Female	No. of Adult Questionnaires	Male	Female
Ballyduff	19	12	7	17	2	15
Dunmore Road	9	5	4	0	0	0
Ferrybank	6	5	1	4	0	4
John's Park	5	2	3	4	1	3
Kilmacthomas	0	0	0	0	0	0
Portlaw	50	22	28	52	13	39
Waterford Childcare Centre	0	0	0	0	0	0
Total	**89**	**46**	**43**	**77**	**16**	**61**

Table 4 shows that three groups participated in the walkability audit. The Ferrybank walkability audit was completed from the centre car park as the community centre was located on a busy road. Kilmacthomas did not complete the audit as it was too dark outside at the time of the workshop, which was conducted in November, and therefore it was not safe to bring the participants outside. The Waterford Childcare Centre also did not complete an audit as the centre is located in an industrial estate and the participants were too young to do it.

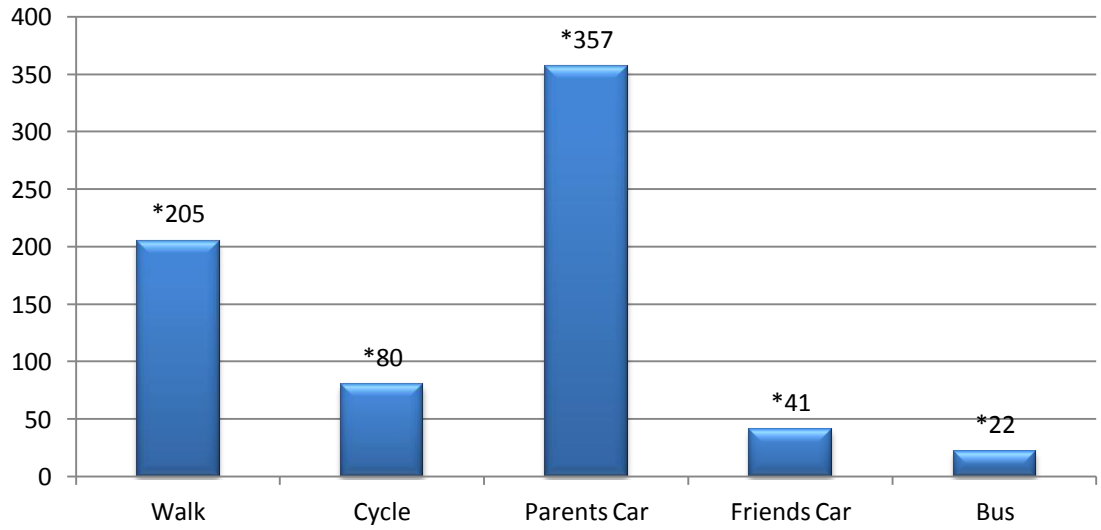
Table 4: Site of walkability audit, number of participants and number of photos taken

Site	No. Of participants	Male	Female	No. Of photos taken
Ballyduff	10	5	5	6
Ferrybank	6	5	1	16
John's Park	8	4	4	12
Total	**24**	**14**	**10**	**34**

Modes of transport used by young people

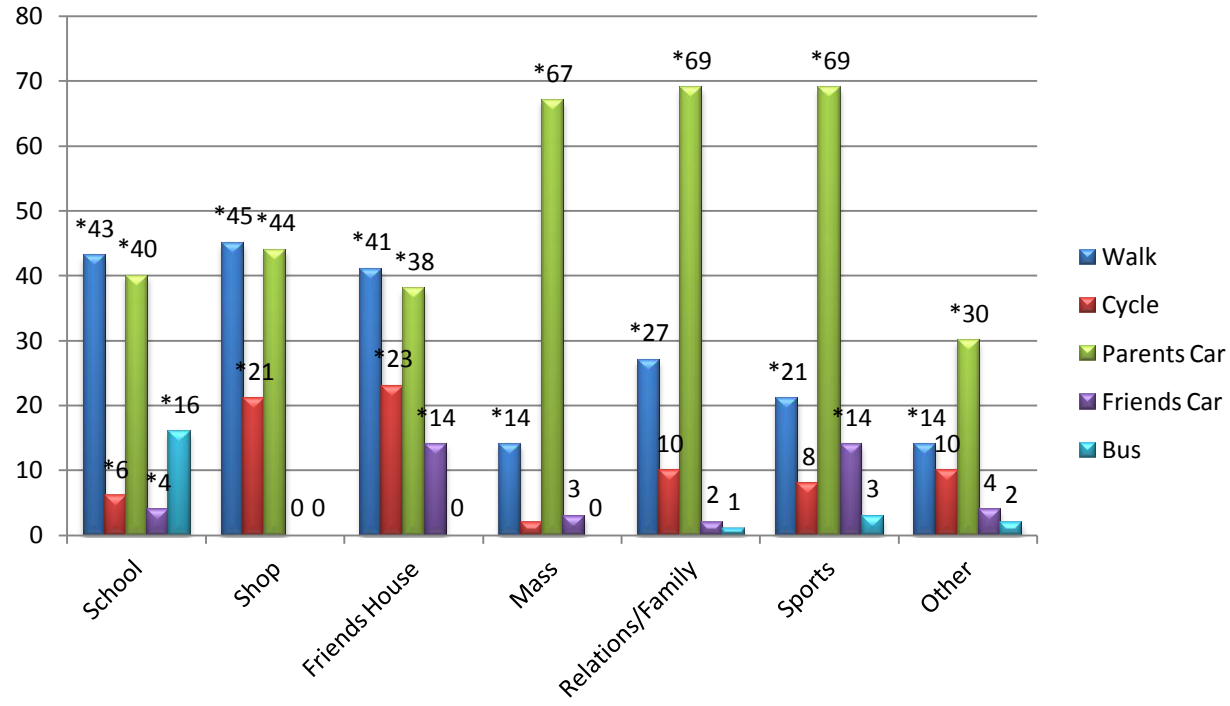
Figure 6 shows the most commonly used mode of transport by children and young people and Figure 7 shows the type of transport used to travel to various different locations.

Figure 6 Most commonly used mode of transport overall



*This number refers to the amount of times that each mode of transport was chosen overall.

Figure 7 Most common type of transport used to various locations:



*This number refers to the amount of times that each mode of transport was chosen

Walkability Audit

The audit was completed by 14 male and 10 female participants aged 15 and above from the workshop and they were helped and guided by one of their leaders and the researcher.

The bar charts below show children and young people's responses to the walkability audit. There are differences between the urban and rural areas, Ballyduff and Kilmacthomas are the rural and Ferrybank and Johns Park are urban. Figures 8-13 shows the number of "yes" and "no" responses to queries regarding the presence of footpaths, pedestrian crossings, people driving too fast, the presence of flowers and trees and if other road users behave safely.

Figure 8 Footpaths present in neighbourhood

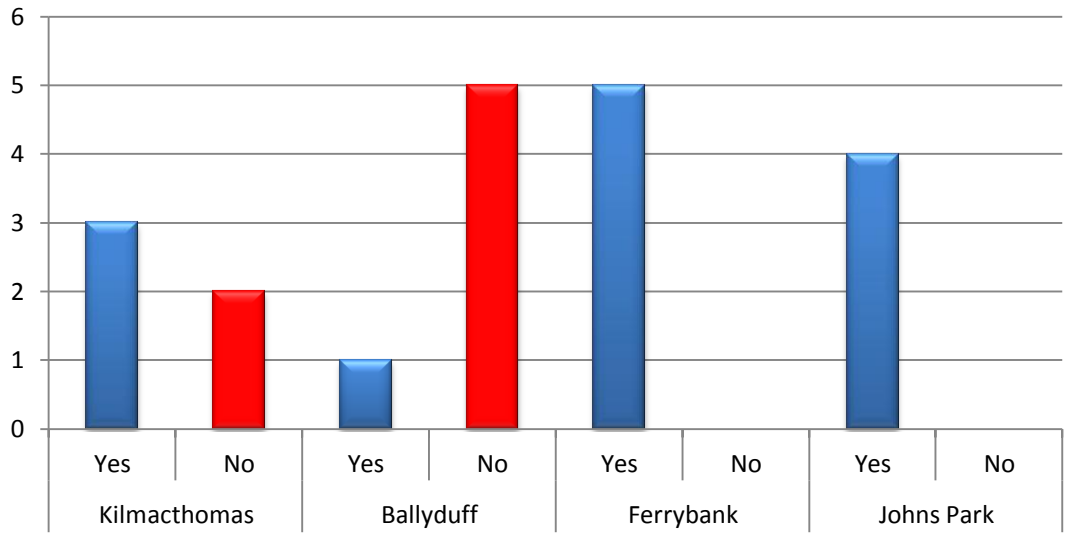


Figure 9 Pedestrian crossings present

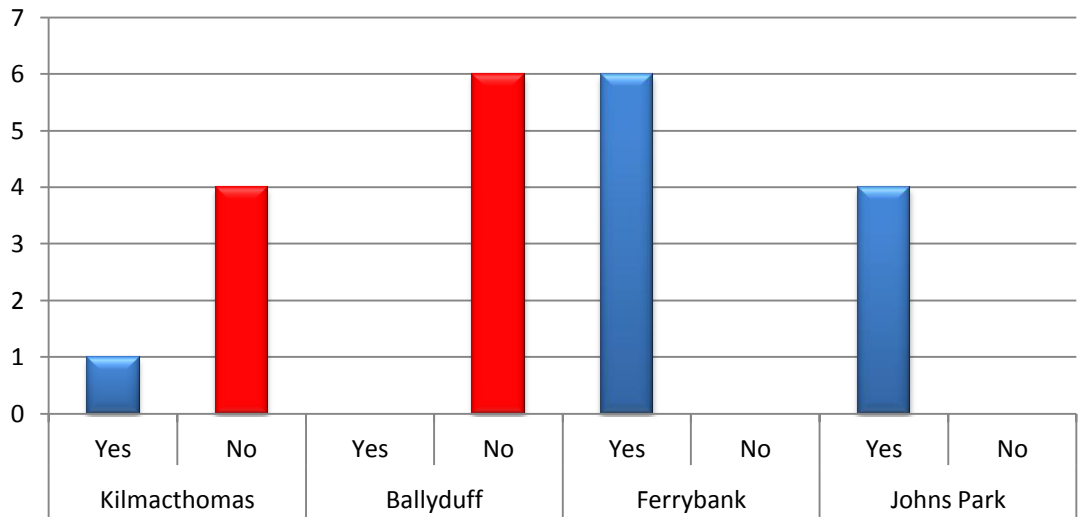


Figure 10 People drive too fast

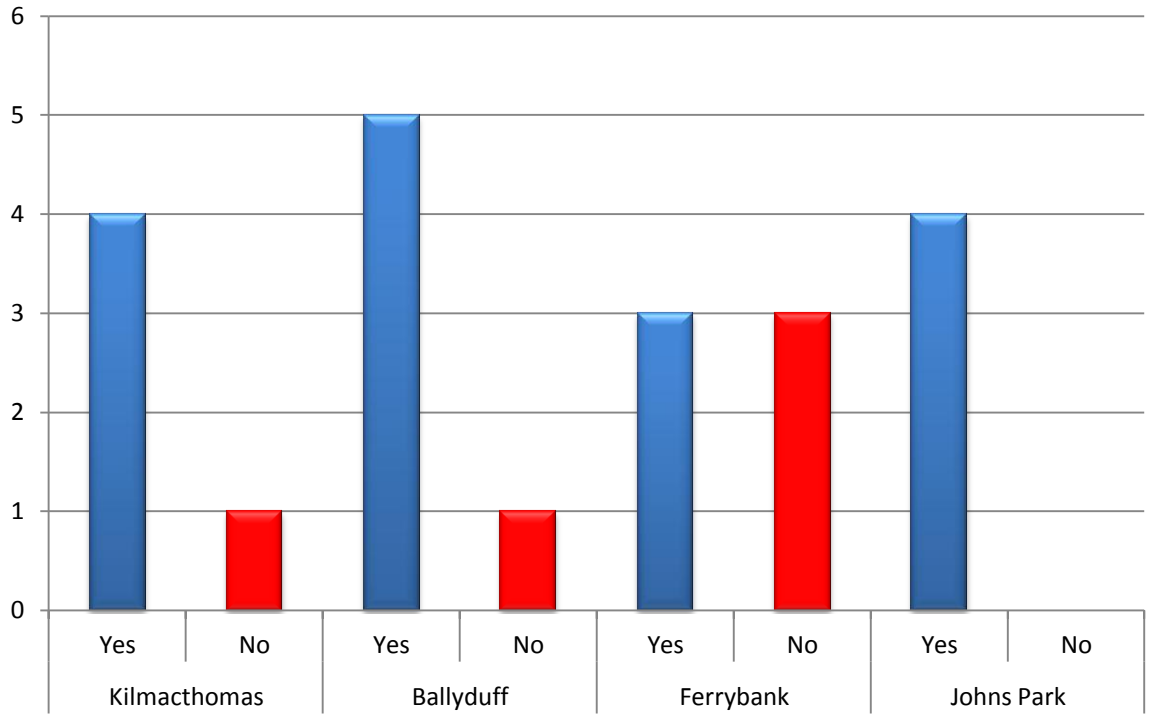


Figure 11 Lacks trees, grass, flowers

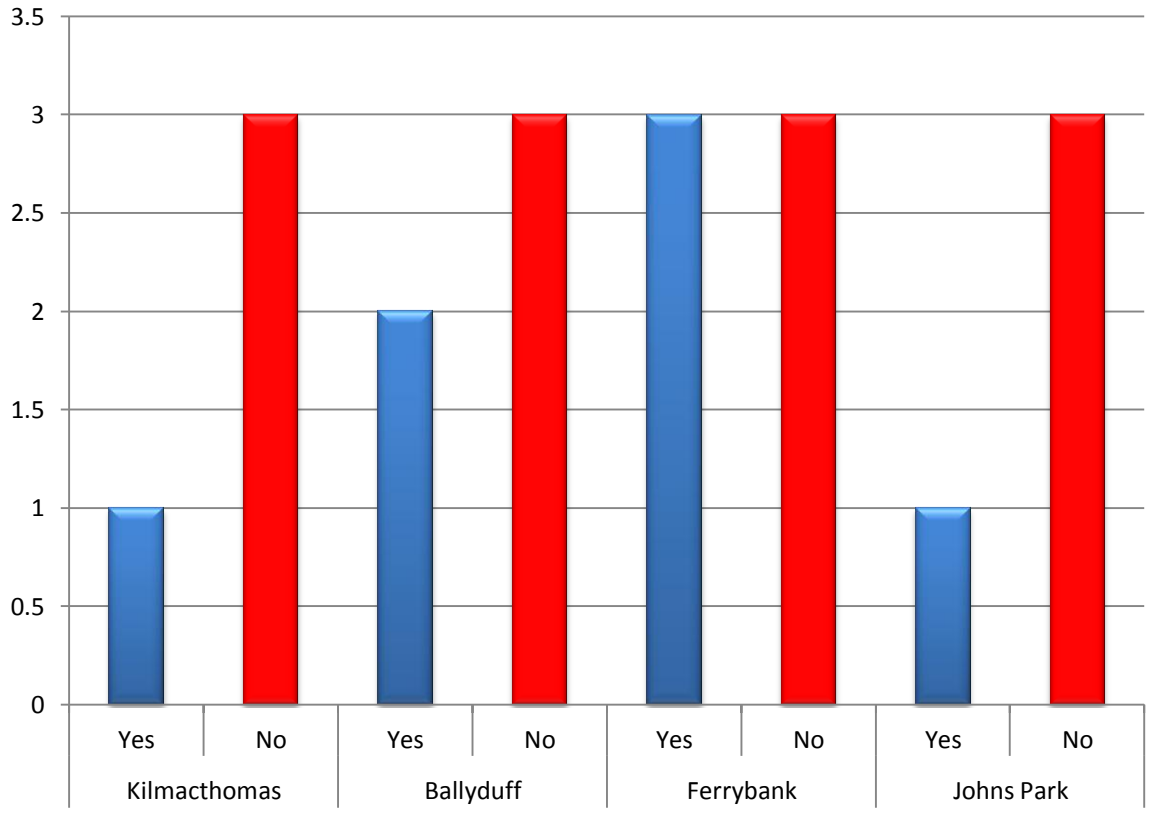


Figure 12 Do other road users such as cyclists/walkers behave safely?

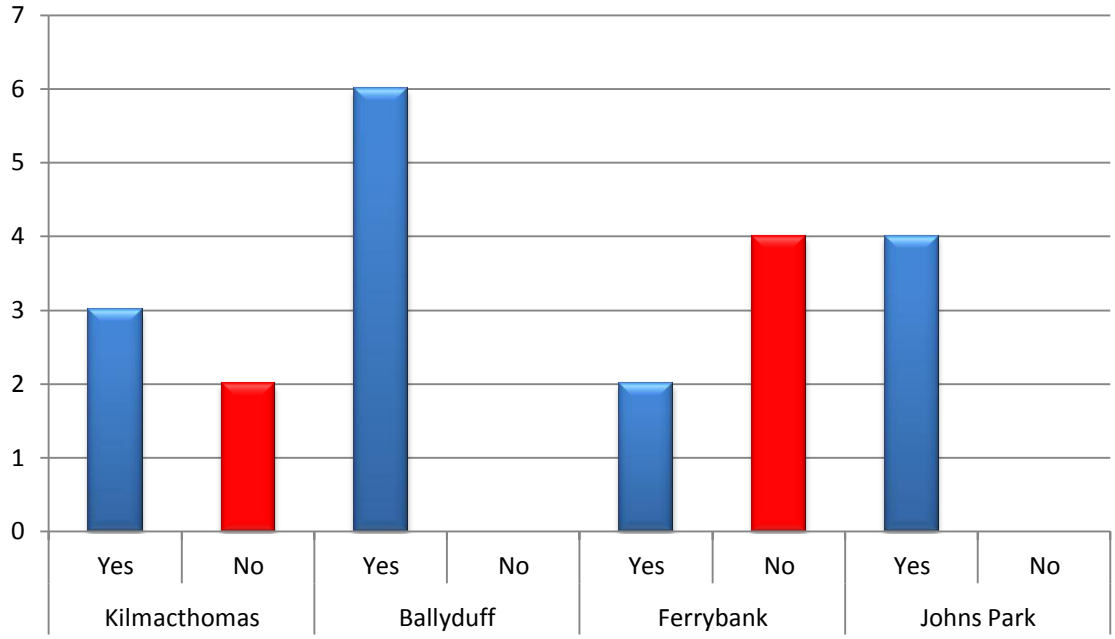
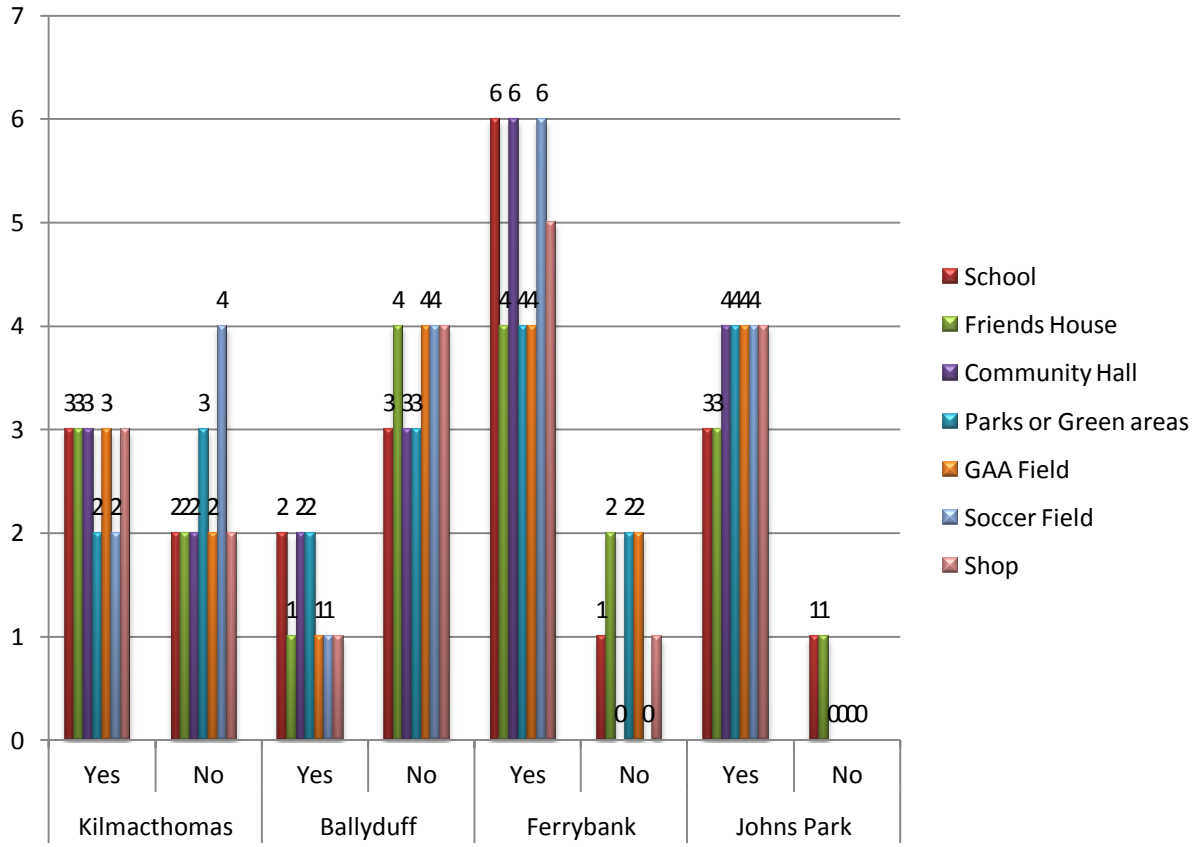


Figure 13 Do the footpaths let you walk to the places you want to go?



Photographs were taken during the walkability audit and two main themes came out of this. These were, "good things in my neighbourhood" and "bad things in my neighbourhood" Figures 14 and 15 show these themes. Figure 14 shows pictures of things that participants thought were bad in their neighbourhood. One of the most common pictures here was litter throughout the neighbourhood. Figure 15 shows good things in participant's neighbourhoods. Participants in the rural area felt that the only good thing in their neighbourhood was a sign warning people of children.

Figure 14 Bad things about my neighbourhood

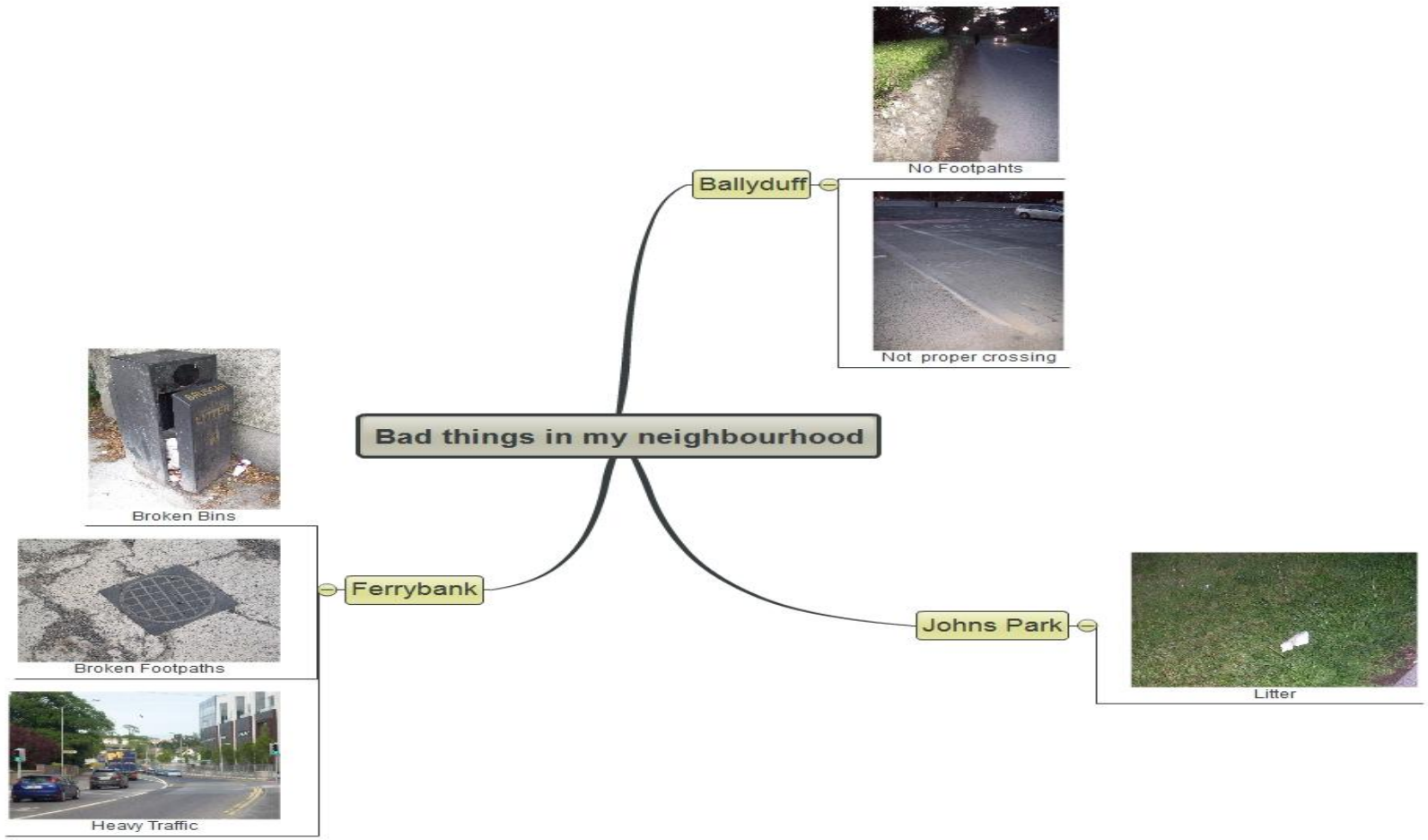
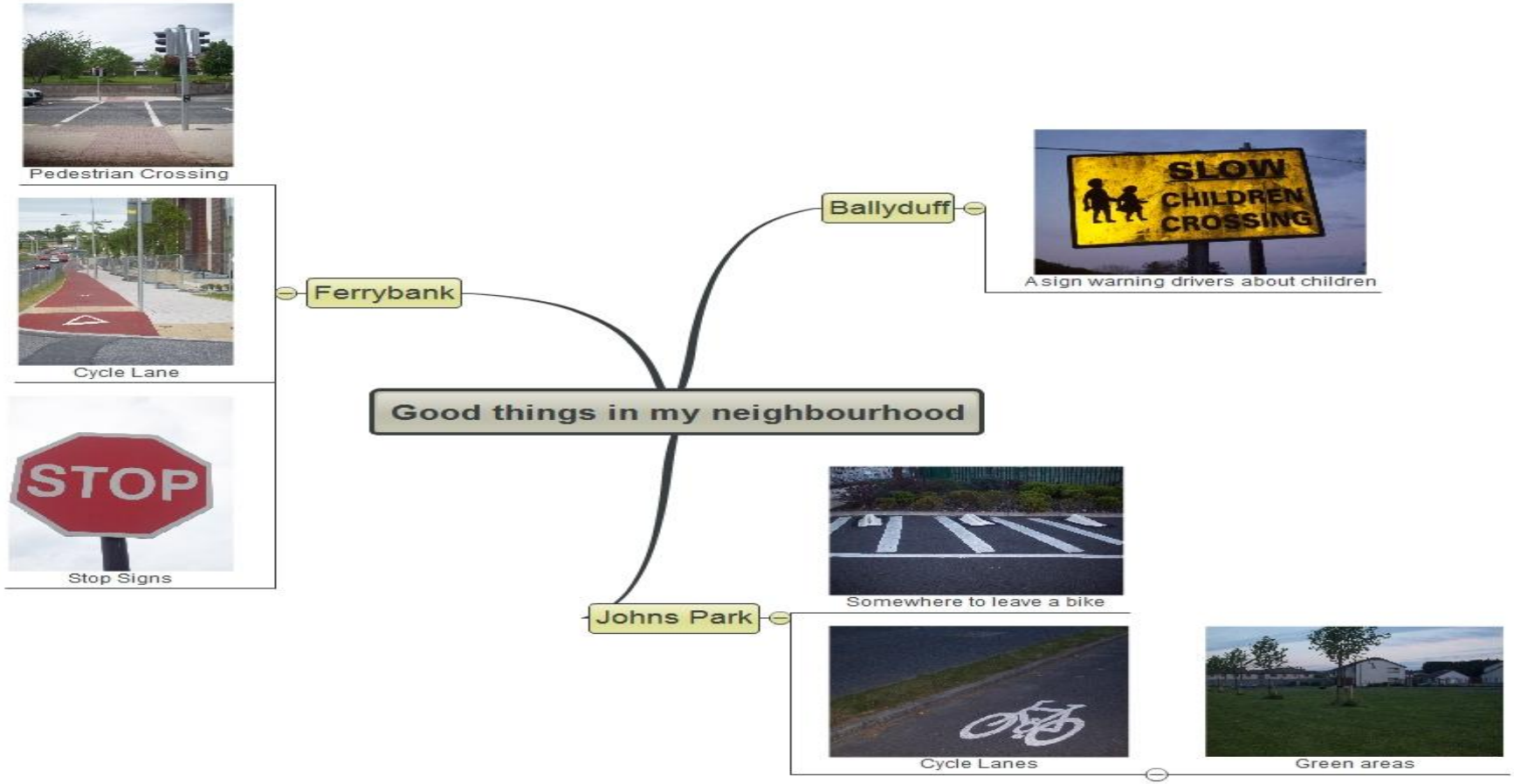


Figure 15 Good things about my neighbourhood



Children's perceptions of their neighbourhood

Overall many believed that they had room to walk (Figure 16) but when it comes to crossing the road safely many participants believe there are several barriers in their way (Figure 17). Tables 5 and 6 show children's perceptions of their neighbourhood and how they felt drivers behaved in their neighbourhood.

Figure 16 Do you have room to walk?

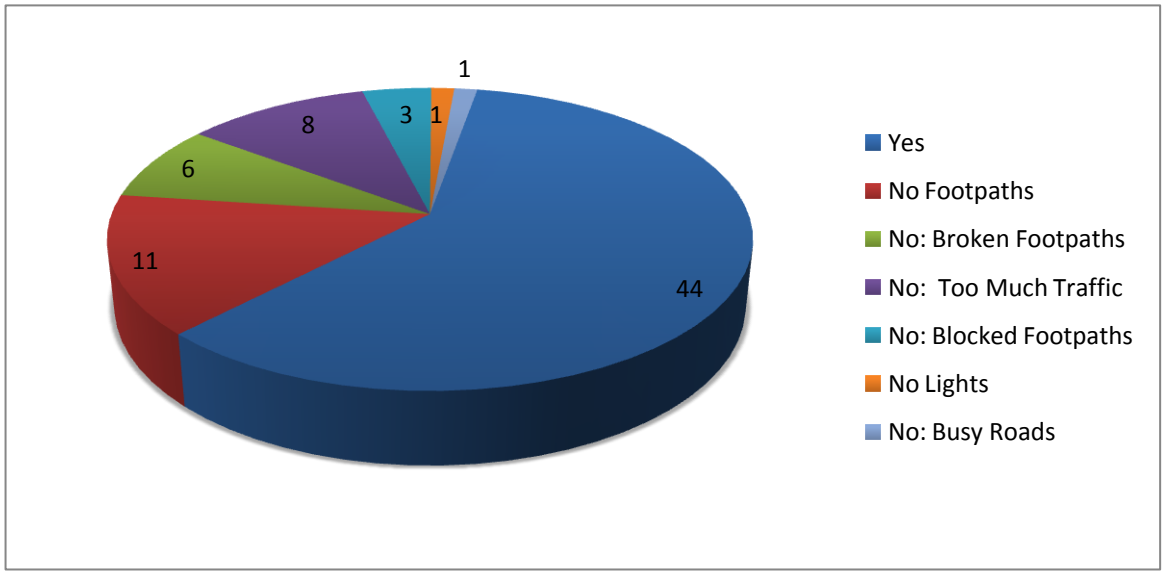


Figure 17 Is it easy to cross the road?

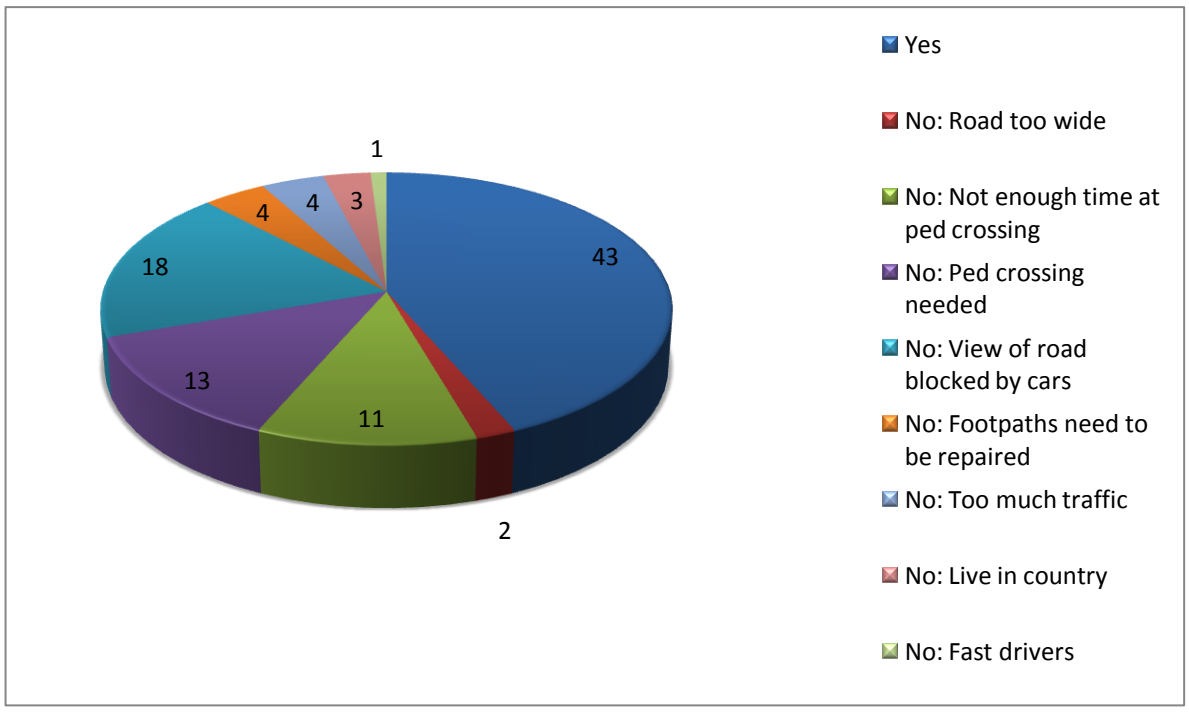


Table 5: Is your neighbourhood a nice place to live?

	Percent (n)
Yes my neighbourhood is a nice place to live	63.74% (58)
No it is not because: - Needs more grass, flowers or trees - Has scary dogs - Has scary people - It not well lit - Has lots of litter and rubbish - Has dirty air due to cars/bus/lorry fumes - *Not answered*	35.16% (32) 7.69% (7) 4.4% (4) 3.3% (3) 9.89% (9) 7.69% (7) 2.2% (2) 1.1% (1)

Table 6: Do drivers behave well?

	Percent (n)
Yes drivers behave well	38.75% (31)
No they do not because they: - Pull out without looking - Do not stop for people crossing the street - Drive too fast - Dont turn on indicators - *Not answered*	60% (48) 6.25% (5) 12.5% (10) 40% (32) 1.25% (1) 1.25% (1)

Workshop Discussion

During the analysis of the workshop discussion there was much duplication within themes so three main themes were finalised.

These themes were:

- Barriers
- Independent travel and freedom
- Perceptions of the neighbourhood

Barriers

There were many perceived barriers to walking and cycling. One of the most popular was the volume and speed and traffic. Even though some of the groups were young, each group was aware of physical barriers such as speed ramps, lack of signs and lack of pedestrian crossings. The latter was particularly common. In Kilmacthomas, one participant did not know that there was a pedestrian or zebra crossing outside her school because there were always cars parked on it.

"Where is there a zebra crossing do you mind me asking?" *Girl (12-15yrs)*

"There is one but sometimes the cars are parked up on top of it, then there is students coming out and cars just stop in the middle of it." *Boy (12-15yrs)*

In Kilmacthomas again participants pointed out that the pedestrian crossing at their school was not clear to cars and people trying to cross the road as it does not look like a crossing. They also noted that after-school traffic is the worst.

"After school is the worst because it's all the same but people get dropped off at different times in the morning" *Girl (12-15yrs)*

Lack of cycle lanes, speed ramps and footpaths are other barriers that were mentioned particularly by those living in the rural areas (Ballyduff and Kilmacthomas).

"There should be footpaths and people should drive slow because people drive really fast by my house." *Girl (12-15yrs)*

One group of city participants felt that two ramps in their neighbourhood were not enough and that there should be more.

"Maybe two or three more" *Girl (12-15yrs)*

"There's only two on that road outside all the way up to the new road" Boy *(12-15yrs)*

When questioned more about cycle paths in their area the Ferrybank group said that there was only one small section of cycle lane in front of a new shopping centre.

Independent Travel and Freedom

Overall there appears to be a lot of walking and cycling by all participants, typically to the shops or to friend's houses. Some participants felt that they were being given a sense of freedom by being allowed to go places alone or with their friends but with some restriction.

"Oh my mam does (leave me go places)*, when I'm in Kilmac* (Kilmacthomas) *she leaves me* (go alone) *but she'd ring me every 10 minutes to see how I was getting on but that really annoys me."* *Girl (12-15yrs)*

Others felt they were denied such freedoms compared to others.

"I say to my mam everyone does it then my mam says does everyone live in this house." *Girl (12-15yrs)*

Other participants said that they were not allowed to go anywhere on their own. This was a very common theme among female participants. Some female participants felt that compared to males they have restrictions on where they can and cannot go.

"No, because I'm not allowed to go on my own unless she (points to a girl beside her) is with me cos of the roads and dogs." *Girl (12-15yrs)*

"My dad doesn't trust me." *Girl (12-15yrs)*

The boys in the older groups (Johns Park and Kilmacthomas), participated in more unstructured walking and cycling than anyone else. When asked do you think you do enough walking and cycling, one girl replied *"No"* and when questioned more about why not, her response was that she was just *"Lazy"*. Whereas when a male participant was asked the same question, his reply was:

"He comes walking with me (points to another boy in the room) everyday; we take to dogs off for at least three hours." *Boy (12-15yrs)*

Participants felt that their freedom to go where they would like is restricted by places being locked up or lacking access to it. In Ballyduff a rural area, one participant talked about an old railway track that is not in use anymore and is used by people for walks.

"There is a railway track by our house and it is not used..... It's the old Kilmeaden railway track." *Boy (12-15yrs)*

"Can you walk on it; can you even get access to it?" *Researcher*

"Yea you can, but you have to go through loads of fields" *Boy (12-15yrs)*

In Kilmacthomas the GAA (Gaelic Athletic Association) pitches get locked up so that no one has access, because of the actions of other people. This frustrated the group as they felt the only place they had to go was the GAA pitch and in order to gain access they had to climb over walls.

"They had it open last summer but teenagers used to go in and drink in there" *Girl (12-15yrs)*

"We found drugs in there, the guards had to come, that's why they had to lock the gates" *Girl (12-15yrs)*

"You have to climb over the wall or under the gate" *Girl (12-15yrs)*

When asked about the age of when young people should be given the freedom to walk or cycle alone there was a varied response. Participants in Johns Park (urban area) felt that children between the ages of eight and 10 were too young to walk and cycle alone but in Kilmacthomas (rural area) participants felt that from the age of eight children should be allowed to walk or cycle on their own.

"Ok, why do you think children between 8 and 10 don't cycle or walk enough" *Researcher*

"Because they are too young" *Girl (12-15yrs)*

"I think you should be eight and a half or nine and a half" *Boy (12-15yrs)*

One participant felt that children between the ages of eight and 10 were just too lazy to walk and cycle to places. They also felt that parents were more over protective with the younger children due to dangers such as strangers.

"*Parents are kind of more over protective"* *(Boy 12-15yrs)*

"Do you know why they are over protective" *Researcher*

"Because there could be perverts in the neighbourhood" *Girl (12-15yrs)*

Perceptions of the Neighbourhood

Many participants in each workshop felt that their neighbourhood was dirty it lacked footpaths and was full of graffiti. The younger group talked about how the rubbish around the neighbourhood does not just have an effect on people but it would also have an effect on wildlife and that it may attract unwanted wildlife such as rats and wasps.

"Rats come along" *Girl (6-10yrs)*

"Birds get trapped in bags" *Girl (6-10yrs)*

Crime was mentioned in different forms in each workshop. Some participants talked about getting mugged while out walking in their neighbourhood while others talked about graffiti and places getting closed down because of it.

" .....there used to be a park there but people kept littering there and writing things so they closed it down" *Girl (6-10yrs)*

"You get mugged everywhere" *Girl (12-15yrs)*

"You could get mugged out there" *Boy (12-15yrs)*

When asked if they would like to see more parks in their neighbourhood the overall answer was yes but participants from Ferrybank felt that a park wouldn't last long before it got closed down due to the actions of other people.

"Yea, but it wouldn't last 10 minutes before it gets destroyed" *Boy (10-12yrs)*

Some participants have experience of items belonging to them getting robbed in their neighbourhood. One participant talked about their house getting robbed and participants that lived in the country felt unsafe as they felt isolated in their neighbourhoods.

"I sort of agree because there used to be travellers by my place and one of them at Christmas time robbed my house" *Girl (10-12yrs)*

"No one lives by me" *Boy & Girl (12-15yrs)*

"Em, my road is really isolated" *Girl (12-15yrs)*

Members of the travelling community were mentioned in association with crime and strangers. Two participants from the Ferrybank talked about items belonging to them getting robbed by members of the travelling community but at different times and one participant in the Ballyduff mentioned that there are always travellers hanging around their area.

"When I lived in New Ross there was a traveller who used to always ask me for my bike. I said yes once and then after that I kept saying no. I went inside one day and when I came back out my bike was gone and when I went down to his site it was in his garden"

Boy (10-12yrs)

"Two years ago when I still had my dog, one day he went out, it was after the travellers had left, my mam let the dog out, one day he walked down where the travellers used to be, we didn't see him for two days, he came back to us covered in mud, we think the travellers took him then let him out and he came back to us" *Boy (10-12yrs)*

Compared to the younger group the older groups talked about how they would like to change visual and practical aspects of the neighbourhood such as the footpaths, cycle paths, and green areas. The Johns Park and Ballyduff group stated that roads should be made bigger and there should be more green areas for them to play on. Participants in Johns Park had mixed opinions on the amount of bins around their neighbourhood. A male participant said that there are too many bins around their neighbourhood while a girl disagreed with this and said that there aren't enough bins.

"Bigger Roads" *Boy (12-15yrs)*

"Put railings beside the footpath" *Girl (10-12yrs)*

Where participants had places of interest to go there was a lot more walking and cycling. In Johns Park, Kilmacthomas, Ferrybank and Ballyduff, participants mentioned that there was some sort of area near them that they always walk or cycle to such as fields, railway tracks, mountains or lakes.

"I live near the mountains and we go cycling up the mountains" *Girl (12-15yrs)*

"We go walking in the woods" *Boy (12-15yrs)*

"There is this lake up by my estate and me and (friend) we're up there before and his brother and we were going into it with this boat we had made and they pushed us and we lost the oar and then we were going in circles." *Boy (10-12yrs)*

Participants in the Childcare group when asked about stranger danger referred to them as males. When asked what to do if a stranger approaches, the response was not to talk to him.

"You don't talk to him, you just walk away" *Girl (6-10yrs)*

One participant in the Kilmacthomas group explained what their mother told them to do if they are approached by a stranger.

"My mam said to me if an ould fella on the street asks you if you want a drink of coke not to take it unless you make sure the cap on the bottle wasn't open, so make him drink it." *Boy (12-15yrs)*

Each group was asked about the term 'stranger danger' and what they thought it meant. Participants in the Ballyduff group associated the term with homeless people.

"There's a fella in town called ... and your passing him on the street and he just goes to you 'how do' he's a hobo like." *Girl (12-15yrs)*

Brainstorm and Final Round

Figure 18 shows the range of responses to the brainstorm activity. Responses were grouped into three main themes: health, the environment and social benefits. Figure 19 shows things that participants felt were needed in their neighbourhood to make it more walking and cycling friendly.

Figure 18 What walking and cycling means

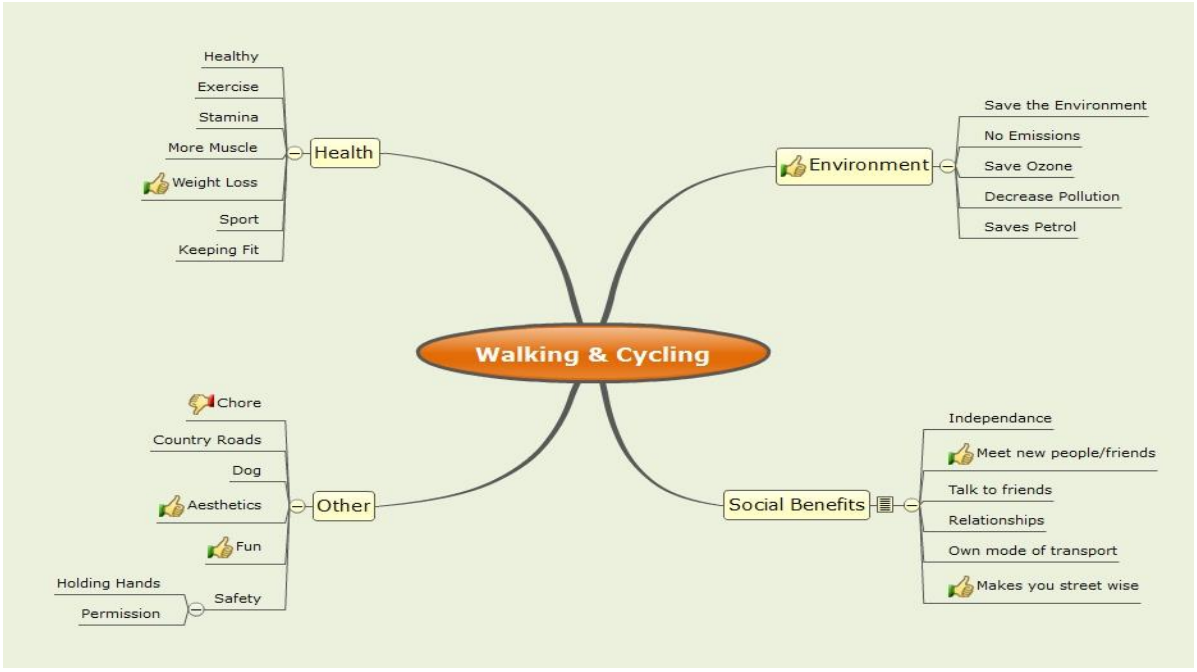


Figure 19 Improvements that can be made in my neighbourhood

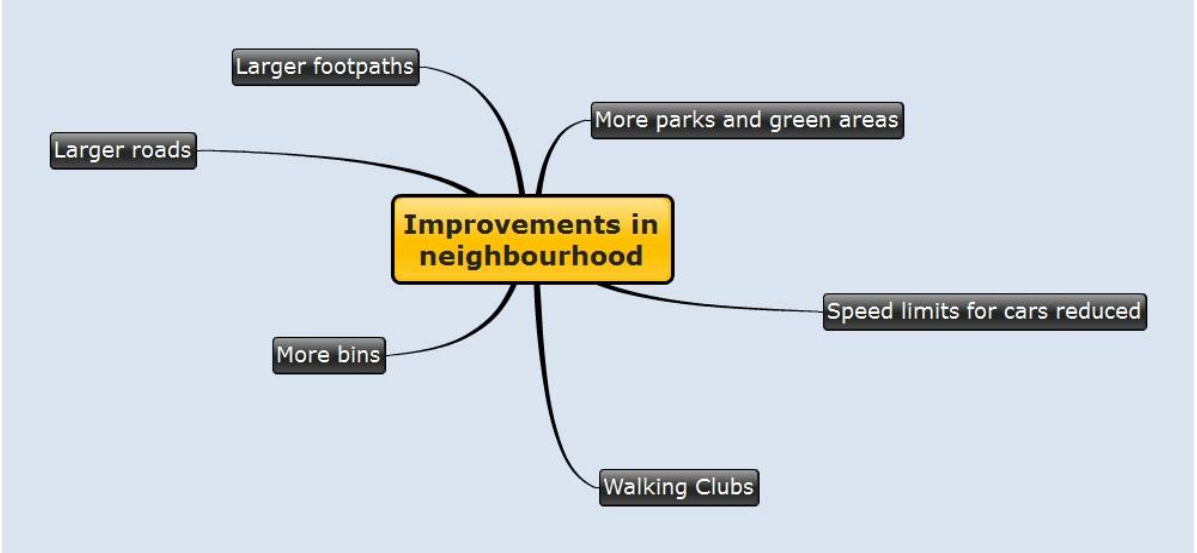


Figure 20 I think my neighbourhood is

Pictures

Table 7: Site of drawn pictures

Site	A	B
Ferrybank	6	
Waterford Childcare	15*	
Johns Park		3†

**Note: eight pictures not used as they content and meaning could not be deciphered*

†Pictures were drawn in pairs.

'A' Pictures

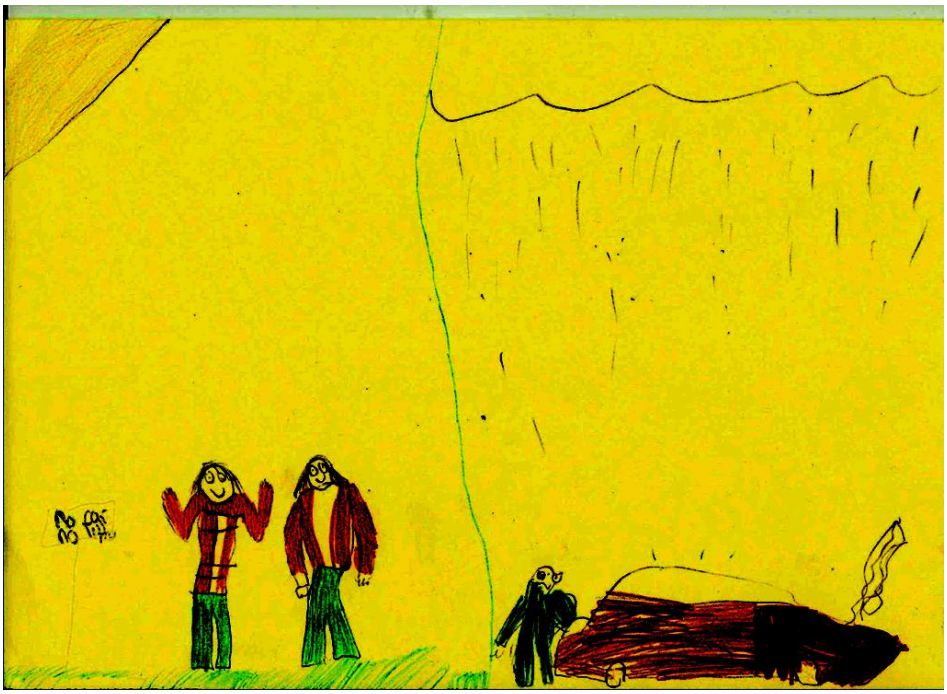
The most common themes in the "A" pictures were safety, better than cars, saves money and enjoyment from being outside. Figure 21 shows how one participant associated ramps with safety for when children are playing outside. The picture also shows happy faces on the children as they are playing. Figures 22 (10-12 yrs), 23 (5-10 yrs) and 24(5-10 yrs) show safety pictures that participants drew.

Figure 21 Safety

Participant Aged 10-12 yrs

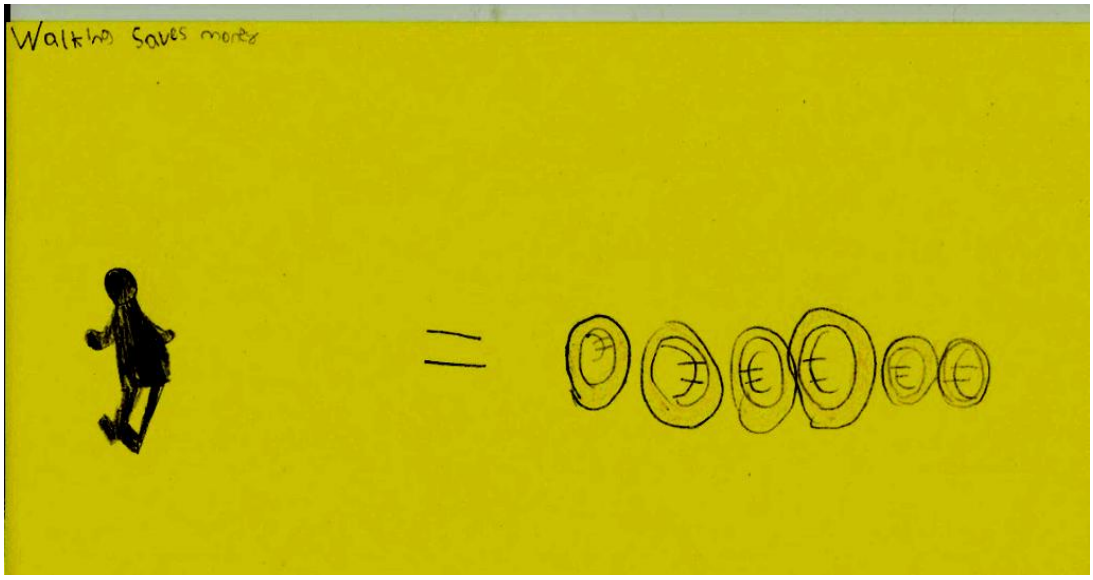
Figure 22 shows how one participant thinks walking is better than using the car as the car may break down. Figure 23 shows how another participant showed that walking can save money.

Figure 22 Its better than car transport



Participant Aged 10-12 yrs

Figure 23 Saves Money



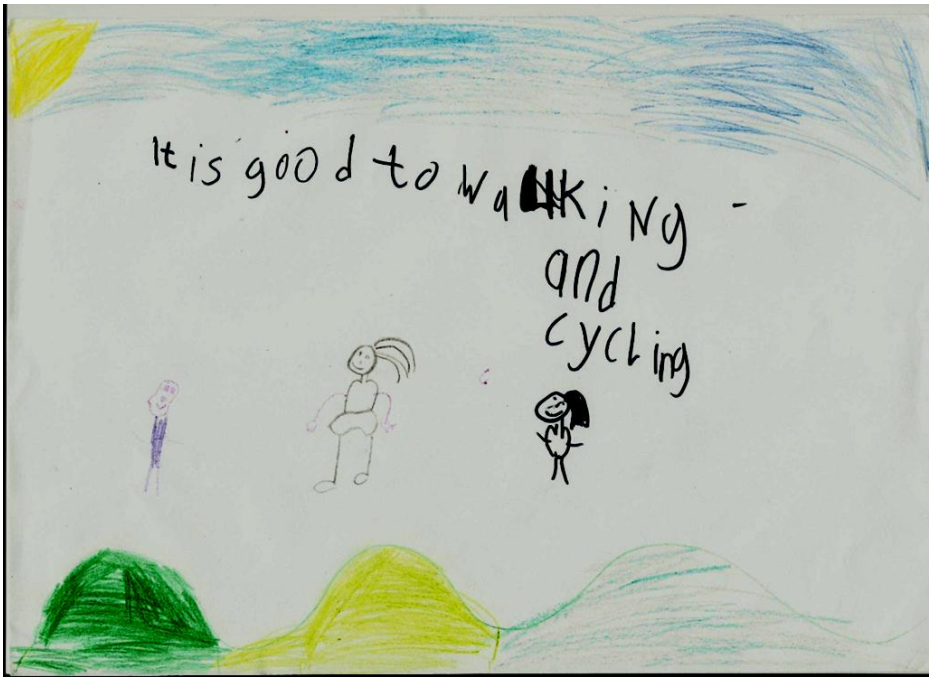
Participant Aged 10-12 yrs

Figures 24 and 25 show that being outdoors represents walking and cycling to some participants.

Figure 24 Enjoyment of being outside

Participant Aged 5-10 yrs

Figure 25 Enjoyment of being outside



'B' Pictures

Figures 26, 27 and 28 show what participants in the older group thought walkable neighbourhoods should look like. Participants who drew these pictures were aged between 12 and 15 years.

Figure 26 Neighbourhood Design 1

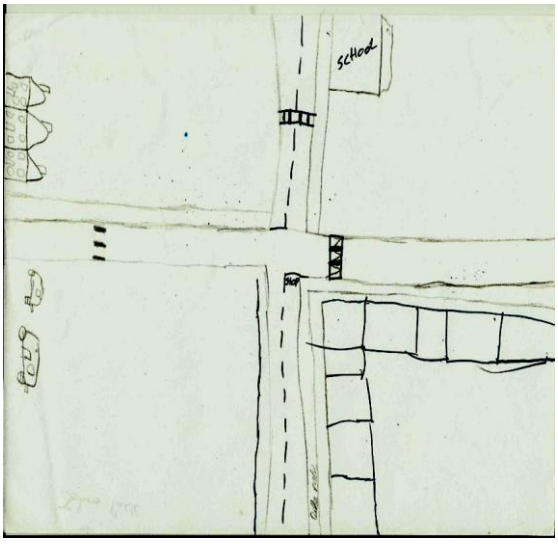


Figure 27 Neighbourhood Design 2

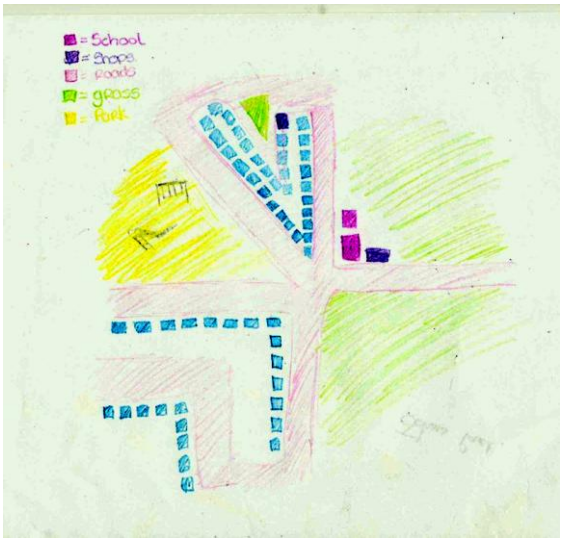
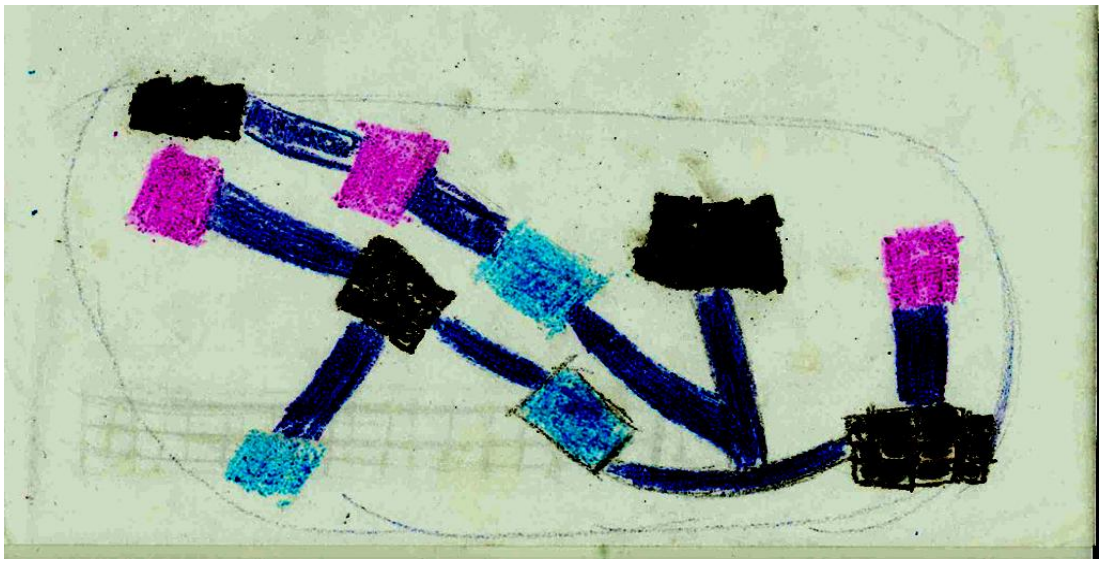


Figure 28 Neighbourhood Design 3



Parents

Parents' Perceptions of their neighbourhood

Parents believe that there were many barriers (figure 30) in their neighbourhood that may stop their children from participating in activities such as walking and cycling. Fast drivers (figure 33) and crime (figure 34) were major concerns for parents in their neighbourhood. The findings below came from the Parents Perceptions Questionnaire.

Figure 29 Safety in the community

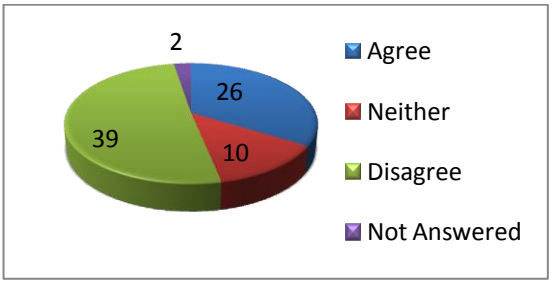


Figure 30 Barriers

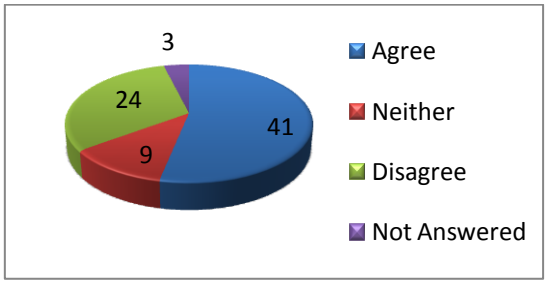


Figure 31 Traffic

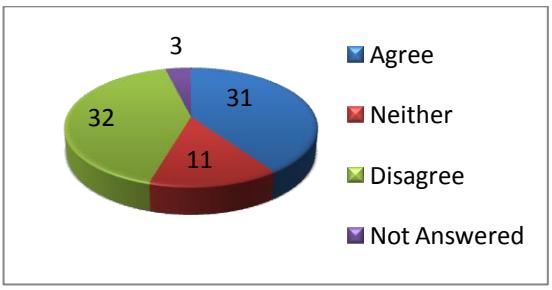


Figure 32 Safe for to children to walk and cycle

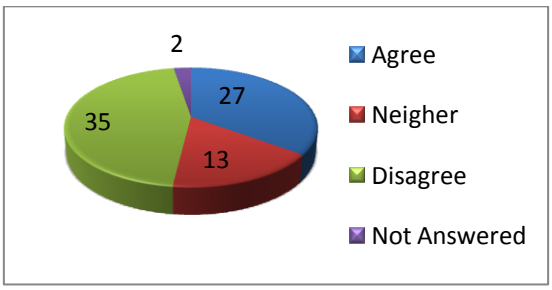


Figure 33 Speeding

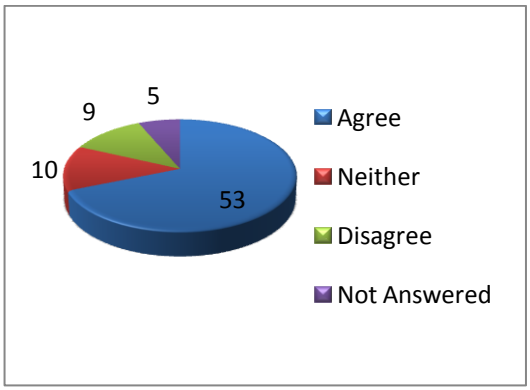
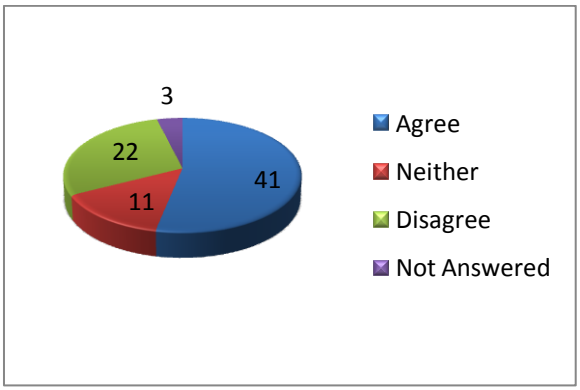


Figure 34 Crime



Parent Interviews

Fourteen emails and twenty-five phone calls were made, the parents were either too busy to take the phone call or there was no answer. Three parents agreed to participate in the 'chats' and there was four email responses. Parents that responded were from Kilmacthomas, Ballyduff, and Portlaw.

Interviews

All were asked 'how do you decide whether or not to let your child(ren) walk or cycle somewhere?' Common responses were that it depends on who the child is with, where they are going and the time of day.

"If they're going to be on their own, what time of day and where they're going." By Interview

"The distance they were travelling and who they were travelling with." By Interview

"It depends, if the place is close by like the third estate to my house, and the weather is okay and not too late at night I will allow, but when it's dark I don't encourage them."

By Email

"Before I decide whether to let my child walk/cycle somewhere, I first find out where they plan to go and how long they will spend there. I then find out if it will still be daylight when they plan to come home. I would always ensure that they don't travel alone." By Email

One parent mentioned how the child's age was a key factor.

"Our local shop is a fifteen minute walk and I would let my fourteen year old walk to the shop but not my ten year old." By Email

However, another parent with children of a similar age said that "the same rules apply to both", when she is letting them walk or cycle somewhere. She described where she lets them go.

"Where I'd leave them would be a four of five minute walk, quick walk from the village and they'd go down to the village to meet a friend that's as far as they're allowed to go, they're not allowed to go further than that." By Interview

Parents were asked about safety in their neighbourhood. One parent in particular from the Ballyduff area expressed her concerns about dangerous bends and lighting around her neighbourhood.

"Street lighting won't help because of the dangerous bends. Even if you were walking on a path down the hill a car could come around a bend on your side." *By Interview*

A parent who replied through an email also expressed their concern about the safety of the roads and that they felt they were too dangerous.

"As for cycling I feel the roads are far too dangerous, with too many cars and too many dangerous drivers out there." *By Email*

"But even until now that she is tweleve years plus, I can't allow her to take it to a far distance (sic)*, I don't want to take a risk or crossing the road* (busy road)*."* *By Email*

Two parents expressed their concern about children not wearing helmets and that when it comes to their children it is an ongoing row to try and get them to wear their helmets.

"If they are to bring the bike down the street they are to wear the helmet and that's usually an ongoing row." *By Interview*

"Another issue I have with cycling is no helmets; I think it should be law that it's compulsory, because they have to wear high vis-vests." *By Interview*

When asked about stranger danger, parents did not feel that it was a big problem in their neighbourhood. One parent felt more concerned about other parents not allowing their child to get dirty when they are out playing.

"If a child even looks at dirt, women panic, they say don't get dirty." *By Interview*

Chapter 5: Discussion

Discussion

The purpose of this study was to investigate children and young peoples' opinions of barriers to walking and cycling, their freedom to travel independently, on foot or by bike and how their perceptions of their neighbourhood affected this. This study also investigated parents' perceptions of their neighbourhood and how this and other factors influences their decision to allow their child to walk or cycle alone.

Findings suggest that similar to previous research, perceived safety (traffic and personal) influences children and young peoples' active travel. Participants were able to identify various barriers within their neighbourhood that may affect their active transport habits. The most common were road safety (dangerous bends, speeding, lack of footpaths) and crime (bike theft, break-ins). Parents also highlighted barriers such as speeding cars and a high crime rate, but distance to a location was the main factor that influences their decision to allow their child to walk or cycle alone. The child's age and who they were with also played an important part. In contrast, children and young people believed lack of trust by their parents was the main reason they would not let them walk or cycle alone. This perception was more common among female than male participants. The car and walking were the most common modes of transport used by children and young people. The car was used mainly for journeys to sports activities, relative's houses and school and the most common place walked to was the shop. Figure 35 illustrates the overall results within the conceptual framework model.

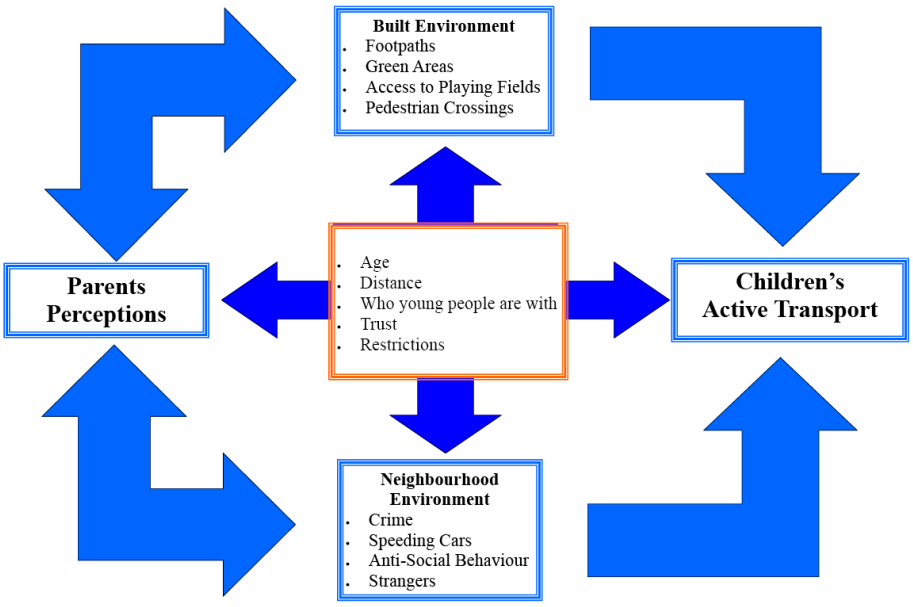


Figure 35: Conceptual Framework Model

Positive aspects of neighbourhoods were the presence of sign posts warning drivers that there were children around, green areas to play, cycle lanes and pedestrian crossings. Negative aspects of neighbourhoods included broken footpaths, litter, overflowing bins, high speed limits on narrow roads and heavy traffic. In relation to "stranger danger" participants were not too concerned about the presence of strangers in their neighbourhood and strangers were just something that they encountered in everyday life. Many participants believe there is plenty of room to walk within their neighbourhood due to the presence of footpaths but even though there are pedestrian crossings they feel that there are not enough safe places to cross the road. One of the main concerns expressed by parents, children and young people was that drivers did not behave appropriately on the roads that they drove too fast and that they did not stop for people who were attempting to cross the road.

Participants identified many social and health benefits of active transport and they were also able to identify many environmental benefits. Meeting new people, making new friends, and gaining independence were social benefits mentioned by participants showing that they are aware of the benefits that active transport can have for their social lives. Giles-Corti et al. (2010) found that social benefits of active transport can help to facilitate incidental contacts between neighbours and can appear to foster social capital (i.e. social networks, norms and trust). These results will be discussed in turn under the following headings: barriers, perceptions and parents views.

Barriers

Research in Australia, the UK and the US show declines in the proportion of children using active transport (Hume et al. 2007). Figures from the CSO Ireland show that there has also been a decline in active transport in children and young people in Ireland but there is limited research explaining why. However, results from this study show that participants walked and cycled a lot around their neighbourhood and surrounding areas even though the car was the most common form of transport used. This finding may suggest that walking and cycling are still common in Waterford in contrast to cities in other countries but this cannot be fully concluded as changes in active transport over time were not measured. Various sources of literature have found that there are many barriers towards active transport. The barriers mentioned in this study are consistent with these findings and are discussed in more detail below.

Road safety is a factor that can play a large part in influencing peoples active transport habits (Grow et al. 2008, and Brownson, Hoehner, Day, Forsyth and Sallis 2009). Yeung, Wearing and Hills (2008) also identified traffic as a negative factor that affects active transport. Children and young people talked about how speeding cars were a major problem and that many small roads especially in rural areas had high speed limits such as 80km/h. Participants felt that a reduction in speed limits may help to improve active transport around the neighbourhood especially around the school area as participants in one urban group felt that 50km/h was too high a speed limit to have on a road by a school. According to Kattan, Tay and Acharjee (2011) speeding is a major cause of frequent accidents around schools and many areas in Canada have reduced the speed limits around schools to protect children.

In addition to driving fast, participants felt that car drivers did not respect the rules of the road. One of the main problems discussed was drivers' lack of attention to other road users such as pedestrians. This finding is similar to Mitchell, Kearns and Collins (2007) who found that drivers, especially near schools, are not cautious enough to look out for children and obey the rules of the road. This lack of attention to other road users can affect the safety of pedestrians using the road. Participants felt that drivers also ignored road markings and stop signs around the neighbourhood. According to Grow et al. (2008) neighbourhood walkability features such as footpaths and traffic safety were significantly linked with youth active transport.

In addition to road safety, children and young people highlighted the lack of footpaths, pedestrian crossings and cycle lanes throughout each neighbourhood. Rahman et al. (2011) state that there is growing evidence demonstrating that the presence of footpaths, safe crossings, walkable communities, accessible destinations and appealing green spaces can improve population physical activity levels. Cycle lanes were a common feature in urban neighbourhoods but many participants felt that the cycle lane went on for a small distance then just suddenly stopped. Cycle lanes seemed to give participants a feeling of security from speeding traffic, so when they suddenly stopped they felt they were more vulnerable. This is similar to Krizek and Roland (2005) who found that when cycle lanes stop this forces the cyclist to merge with traffic putting them in danger. Participants stated that after school was the worst time for traffic in their neighbourhood as everybody was getting picked up from school at the same time. This shows that children and young people are very aware of traffic levels and therefore their own safety on the road.

In urban areas pedestrian crossings were a common feature around the neighbourhood. Rural groups wanted more and wanted better signposting for the ones that were there already. Outside the schools in the rural areas participants mentioned that there were pedestrian crossings but because they were not signposted properly, people kept parking on them. While urban groups were happy with the number of pedestrian crossings they felt other traffic calming devices such as ramps were needed more. Many studies have found that an increase in active transport is positively related to pedestrian crossings in the neighbourhood. Timperio, Ball, Salmon, Roberts, Giles-Corti, Simmons, Baur and Crawford (2006) found that longer distance to school, a need to cross busy roads, and poor access to pedestrian crossings were negatively associated with active transport.

Access and distance to facilities were also important barriers. Panter and Jones (2008) state that access to a range of facilities such as playing fields that people may use for exercise, has been shown to be associated with physical activity levels. In this study the majority of participants had access to places to go, such as playing fields, an old train track, shops and fields that are within walking distance. Some participants felt that they did not have proper footpaths to get them to where they want to go safely, such as school. According to Bringolf-Isler et al. (2010) living close to parks and playgrounds has been found to be associated with physical activity levels.

Another group talked about having to gain access to their local playing field by crawling under the gate as it is always locked. When questioned why they had to crawl under the gate to gain access participants stated that there used to be people who went in there to drink so it was locked up to try and reduce this behaviour. This shows adults restricting children and young people's freedom in the neighbourhood. A parent's natural instinct is to protect their children by whatever means necessary. Parents feel that by locking up these places they are keeping their children away from harm, but by locking up places such as local playing fields, adults are controlling what children and young people can and cannot do and are controlling where they go. This may in turn do more harm than good as it can decrease physical activity levels. Other participants talked about how parks would not last in their neighbourhood as they would get destroyed due to the acts of others.

Parents are also role models for children and young people when it comes to active transport. The most common mode of transport used in the study was the car but a significant minority of participants walked to school and various other locations showing that in some areas walking is still a common form of transport. It is likely that the participants questioned may have lived locally and attended the local school. Across many studies walking to school is one of the most popular ways of trying to motivate children and young people to engage in more active transport. Nelson et al. (2008) found that three quarters of Irish adolescents who live within one mile walk to school and 8% that live within in two miles cycle. One group explained how they would like to walk to school but due to their school being located at a significant distance away their only option was to go by car. This finding concurs with those of the National Research Council (2005) who state that the steady decentralisation of metropolitan area population and employment to low-density, widely dispersed suburban location has increased travel distances to many destinations such as school and made the private vehicle the most practical and most convenient mode of transport.

Perceptions

The majority of participants reported that their neighbourhood is a nice place to live though some participants felt that their neighbourhood needed more green areas in order to make it more desirable. When it comes to deciding to be active, individuals' perceptions of their environment plays an influential role (Ziersch et al. 2005, Carver et al. 2008 and Hume et al. 2009). As stated previously having places to go within a short

distance that are accessible to individuals may help to improve active transport and physical activity levels. According to Davis and Jones (1997) children and young people see their local areas as places to be active and welcome their familiarity for out of school activities. If a person perceives their neighbourhood as being unsafe or as having few places to go within walking distance then there is an increased chance that they are unlikely to use active transport.

Hume et al. (2007) found that children and young people who said that there was a lot of graffiti in the neighbourhood walked more frequently than those who disagreed. The majority of participants in this study mentioned at different stages that they were physically active and were aware of litter around their neighbourhood. Similar to Hume et al. (2007) inactive participants in this study were concerned about litter in their neighbourhood. Young participants talked about how litter can affect the various types of wildlife in the neighbourhood by putting them in danger and how it can attract unwanted wildlife such as rats or wasps. This may affect how often the children venture out into the neighbourhood, therefore reducing their active travel and physical activity behaviours.

According to Burdette and Whitaker (2005b) to enhance the safety of playgrounds and other places where children and young people play they should be free from litter, broken glass and illegal activity. As stated previously participants in this study feel that due to the antisocial behaviour of others, parks would not last long in their neighbourhood. This antisocial behaviour of others may stop children and young people using places such as parks as they may feel that they are putting themselves in danger. Davis (2001) found that parks were seen as the territory of older youths that intimidated and posed a threat to younger children. According to Nelson et al. (2008) perceptions of personal safety from real or perceived crime are predicators of recreational physical activity among adolescents. Safety concerns play an important role in how people respond to the built environment, with perception and fear of crime an important contributor to inactivity (National Research Council 2005). According to Foster, Giles-Corti and Kuniman (2010) fear has a negative association with health. Studies have found that fear can heighten feelings of anxiety and unease to the detriment of psychological wellbeing and mental health. To lessen their fears, people may hold back from taking part certain activities to avoid certain places or situations they perceive to be unsafe (Foster et al. 2010). This withdrawal can affect the formation

of social ties, social participation and physical activity levels (Foster and Giles-Corti, 2008). Parents may tell their children to avoid certain areas and people in their neighbourhood and may give the children a heightened sense of fear towards these areas.

However, when asked about strangers in the neighbourhood children and young people tended to laugh and show a relaxed feeling towards them and some participants were more aware of the concept than others. One male participant talked about how his mother had told him if he was ever offered anything by a stranger to refuse it and a younger participant talked about how they were told to just run away if they were ever approached by a stranger. Some participants were a little confused about the term stranger danger giving the impression that some parents may not talk about strangers to their children. According to DiGuiseppi, Roberts, Li and Allen (1998) parental fear about "stranger danger" influenced their decision to drive their children to school. Parents feared that their child may be harmed by a person that they do not know. Hillman (1999) and Carver et al. (2008) argue that children are far more likely to be injured or abducted by a parent and people that they know rather than strangers. According to Carver et al. (2008) concern about stranger danger exists despite statistics demonstrating that sexual assault is less likely than other crimes against children to be inflicted by a stranger. A report from Australia suggests that parents are overly anxious about their children's safety and can exaggerate the risk of strangers to their children (Carver et al. 2008). There is no research available in Ireland on "stranger danger" and how it affects active transport. Parents may exaggerate what they tell their children about strangers, which may increase the likeliness that children may not want to go out in the neighbourhood due to the fear of being approached by a stranger.

Participants in this study also referred to strangers as "him" or "fella". Some participants also talked about shooting or stabbing strangers if they were ever approached by one and when asked if they were worried about strangers their response was that they would not be worried if they had a weapon such as a knife or a gun. Fyhri and Hjorthol (2009) found that in comparison to other studies where stranger danger may play a vital part in active transport behaviours they found a weak contribution between active travel and stranger danger. This is also a similar finding in this study as participants did not seem to be worried when talking about strangers and that it didn't affect their active transport.

Participants also tended not to show any form of fear when talking about muggings and crime in their neighbourhood. This just seemed to be a part of their daily life that they are used to and that it is just expected. Romero et al. (2001) found that unlike what has been found in previous studies, children from neighbourhoods of lower SES engage in physicaly activity even if there is a high crime rate or gangs around the neighbourhood. The neighbourhoods used in this study would not all be considered to be of a low SES but participants from each neighbourhood were able to talk about robberies, vandalism and unsocial behaviour in their neighbourhoods. They also talked about members of the travelling community robbing houses and pets around their neighbourhood. People hanging around their neighbourhood, taking part in antisocial behaviour, such as drug taking and the consumption of alcohol, and parks destroyed by graffiti were also mentioned.

In addition to fears about strangers and crime within the neighbourhood, trust issues from parents can also influence active transport behaviours. Morrongiello and Dawber (1999), found that even if there were no apparent sex differences in childrens abilities in a situation that may cause injury parents seemed to have a greater expectation for sons compared to daughters. Some participants felt that their parents had a lack of trust in them to go places alone, that they always had to travel with a friend. Participants in the younger groups were not allowed to go anywhere unaccompanied and participants in the older groups were only allowed to go places if they were accompanied by a friend. This was a common theme with most of the female participants in the study. This lack of trust within the female participants may suggest that parents may feel that girls are more vulnerable out in the neighbourhood compared to boys who talked about going off on walks for hours. One girl in particular talked about how her mother calls her every ten minutes when she is out with her friends. This finding is similar to Hillman (1993) who stated that boys enjoy far more independence than girls in relation to be allowed to cross roads on their own.

Apart from trust, age can also play a part in active transport behaviours. Children over 12 years of age tended to have more freedom than children younger. Dellinger and Staunton (2002) found that the average age leaving primary school is 12 years of age and Valentine (1997) argues that many children are granted greater independent mobility when they are moving from primary to secondary school. When the children

and young people were asked about age and being allowed to walk and cycle alone they felt that children over the age of eight should have more independence than what they are given. When asked why they were not given independence at the age the most common reason was that parents were worried about strangers, which is a common finding in previous literature.

Parents perceptions about strangers, road safety, and their activity habits may have a lasting effect on their children. According to Hjorthol et al. (2009) parents are role models for children in their transport decisions. If the use of the car is the usual mode of transportation for the parents it is likely that children will develop the same habits in the future. Davis (2001) found that children and young people suggested that adults should be setting good examples by cycling, walking and driving more responsibly.

Active transport in children is typically mediated by parental decisions and therefore, parental perceptions rather than objective measures may play a more important role in parental decision making (Kearns and Collins 2003). Parents who are fearful of their children's safety on the roads or within the neighbourhood tend to impose stricter restrictions on children's activities such as walking, cycling or playing out on the street (Kearns, Collins and Neuwelt 2003). According to Hillman (1999) the increase of car use on the roads has resulted in heightened levels of danger and a reduction in the presence of people such as children and neighbours out and about on the street. All of this affects perceptions of liking and belonging to a neighbourhood.

According to Morrow (2000) it is important to try and understand whether young people have a sense of belonging in their neighbourhood. Children and young people want to feel like they belong in a community where they are treated right and it is a warm and friendly neighbourhood. This may mean that children and young people want to belong in a neighbourhood where the people there are like another family. Participants in this study talked about how they feel that developers only build neighbourhoods to facilitate themselves and not the people that are going to be living them. They believe that developers focus more on design rather than functionality and focus more on making a neighbourhood look more attractive to entice people to live there. This finding is similar to Morrow (2001) who states that young people want to have access to safe local streets and neighbourhood spaces to be active in but they are well aware that their needs are neglected.

Participants in this study felt that they should have a say into what happens to neighbourhoods as they are out in them more than adults. Davis and Jones (1997) states that we must rethink who uses the neighbourhood and acknowledge that children and young people have an equal if not greater claim to access and independent mobility in their local areas than adult car drivers. When it comes to spending time out in the neighbourhood, children and young people are the ones who spend the majority of their time there. The slightest change in a neighbourhood structure e.g. to facilities, or footpaths, may have a positive or negative effect on children and young people's behaviour. However, residential areas are built for children and young people but not with them in mind. Research has found that there is now evidence available that shows children's and young peoples' needs are subjected to those of adults and that they have to 'fit in' and 'make do' (Davis 2001). Findings from this study can relate to this 'fit in' and 'make do' way of living because as stated previously participants in this study felt that developers were building neighbourhoods to suit themselves by making them look pretty rather than building them to suit the needs of the people who are going to be living there.

Parents Views

The natural instinct of parents is to protect their children from harm. Ways of protecting their children include offering them protection inside of cars and houses away from strangers and away from fast cars. Carver, Salmon, Campbell, Baur, Garnett and Crawford (2005) and Napier, Brown, Werner and Gallimore (2010) found that if parents had concerns about street crossings, traffic, general difficulty walking, distance and crime, then their children were less likely to walk places. The majority of parents agreed that there was a problem with traffic and speeding in their neighbourhood. This finding is similar to what has been found in other studies such as Timperio et al. (2004) who found that parental rather than children's perceptions of road safety had stronger associations with children's walking and cycling in the neighbourhood. They found that girls agreed with their parents about their perceptions of strangers in the neighbourhood, whereas boys agreed with that similar to their parents there was more danger from traffic. Both boys and girls in this study agreed that road safety was a major concern within their neighbourhood.

Dangerous bends were a specific concern in rural areas where parents felt that cars drive too fast and that a car could come around the corner at any moment while they are out walking. Parents in rural areas were also concerned about busy roads that their children may have to cross in order to get to various locations. This finding is similar to Carver et al. (2008) who found that parents of adolescents felt that there were no lights or crossings for their child to use and that major barriers to walking or cycling (such as main roads) were present in the neighbourhood.

According to parents, dangerous roads influences their decision on allowing their child(ren) to walk or cycle, but distance played a large part in influencing their decision. Davison and Lawson (2006) found that the proximity of parks and playgrounds and the number of play areas within walking distance of home were associated with higher physical activity levels in youth. Children and young people in this study were more concerned about having access to facilities such as playing fields, than how far they had to travel to get to them. Parents however, were more concerned about how far their children had to travel to get to these various locations. This result is consistent with other studies such as Yeung, et al. (2008). Yeung et al. (2008) found that with increasing distance, children made relatively fewer active trips.

As stated already parents in this study were worried about the level of traffic around their neighbourhood as an increased level of traffic meant that there was increased danger for the children and young people. Parents own perceptions of their neighbourhood may affect how much walking and cycling they allow their child to take part in. Johansson (2006) states that parents who thought that there was a lack of traffic lights, crossings and a need for their child to cross several roads were less likely to allow their child to walk or cycle alone. Results from other studies found that these factors can vary from country to country. An Australian study by Collins and Kearns (2001) found that illegal or dangerous parking and poorly designed street crossings affect their decision on allowing their child to walk or cycle alone. Weir et al. (2006) found that in America neighbourhood safety was a key factor in parents' decision making.

According to Veitch et al. (2010) previous research has shown factors such as parental concerns about neighbourhood safety, availability of friends to play with and access to

interesting play areas nearby home are important influences on children's active free-play. Parental concerns about road safety are related to active travel around the neighbourhood in this study. Going places with friends was a common factor that influenced walking and cycling habits. Participants talked about how they were only allowed to go places with their friends. This was also brought up by parents as they talked about finding out who their child is with before they decide to let them go anywhere. Studies have found that parents are insecure about and lack trust towards the urban environment and this may affect the amount of independence that they allow their child in the neighbourhood (Prezza et al. 2005).

According to Dellinger and Staunton (2002) safety was a particular concern in primary school children, which may account for the finding that parents rated their child's age as the most important factor in their decision to allow their child to walk to school and the older age of children using active transport. Parents in this study reported their child's age plays a big part in influencing their decision on allowing their child to walk or cycle alone.

Limitations

Although the current study provides new information and supports the findings of the existing literature, this study faced a number of challenges and limitations. First, the sample size was small, especially with regard to parents. On the questionnaire parents were asked if they would be available for a follow up call to discuss further the issues raised and the majority of parents responded with a 'yes'. However, when it came to the follow up many parents did not answer their phone or said that they were not willing to participate. Repeated attempts were made by email and phone to contact parents but this proved futile in the end and may have been due to a lack of time by the parents.

A comparison between urban and rural groups would have been an ideal way to explore the differences in walking and cycling habits in the neighbourhood and in the factors influencing active transport such as crime, traffic, access to places to go, 'stranger danger' and distance between the two areas. This was not possible due to there being only two rural groups.

A lot of searching was done to find a walkablility audit that would be suitable for this study. Existing measures were either too long or needed considerable adjustment to be suitable for children. In order to make them suitable, questions were altered by rephrasing the language to make it easier to understand. In the end the audits that were conducted in each neighbourhood were too short. Such audits should ideally last 30 minutes in order to properly assess the neighbourhood but in this study they took at most 15 minutes. Therefore a rushed and less detailed audit was completed around the neighbourhood.

Similarly, the perceptions questionnaire for children and young people was also too short and too simplified for the older participants because of the modifications that had to be made. Older participants may have been able to express more by using the parental perceptions questionnaire.

There was a variety of ages within each group which made it more difficult to maintain the same structure throughout each workshop. Overall, it was difficult to work with children across the child-adolescent age range in the same workshop. Many of the younger children needed guidance and help while answering the questionnaires while older children finished too quickly. In particular compared to the older children, younger children had a very short attention span and some of their inputs were difficult to understand, e.g. drawings.

The timing of some of the workshops was a major limitation. Some workshops were conducted in the winter which meant that the audit could not be done because it was dark outside. Also most workshops were conducted in the evening time when children and young people were finished in school, tired and their attention span was limited.

Finally, the use of mixed methods was another limitation. A lot of data was collected from questionnaires, photographs, audits, pictures and transcripts from the workshop. It was very challenging to make sure all the data linked together. There was a lot of information to take into account when analysing and it was very challenging to make sure that it all linked together.

Chapter 6: Conclusion & Recommendations

Conclusion

The aim of this study was to look into perceptions of the built environment and active travel in children, young people and their parents. Few studies have examined children's perceptions in an unstructured setting away from school. Results from this study indicated that while parents and children have similar perceptions they also have some that differ. This study has also produced evidence that children and young people walk and cycle more than is apparent in the literature.

Similar to McMillan (2005) and Panter et al. (2008) there are many factors which link together that are associated with active travel behaviours. The conceptual framework (figure 35) shows that all issues examined are inextricably linked together and that each one can influence the other. Distance to travel is a very good example of how it affects the different factors. If a child or young person has to travel a long distance in order to get to a playing field they are more likely to encounter speeding cars in their neighbourhood environment. The presence of adequate footpaths and pedestrian crossings increases their likelihood of getting there by active transport modes. Parent's perceptions can be associated with their children's own perceptions, which can in turn sway their active transport choices. If a parent thinks that somewhere is too far to walk/cycle, if there are no proper footpaths or if there are a lot of speeding cars then they may be worried or fear for their child's safety. This fear may pass to their children and reduce their active transport because they may become fearful of traffic on the road.

Distance was a main concern for parents as they cited it as their main barrier to active transport in their children. This poses more of a problem for children in the rural area as places like the shop may be located some distance away parents were less likely to allow their children to walk/cycle there. Aside from distance, other factors within the neighbourhood can have an effect on active transport. Davis and Jones (1997) state that if children and young people spend increasing amounts of time indoors, because of traffic, "stranger danger" and their own or parental fears, then their physical and social health and quality of life deteriorate.

Participants in this study showed an eagerness to be active around their neighbourhood but they felt that they were restricted to what they could do and where they could go due to the actions of others. Community areas such as the local playing field, were often

locked up due to older adolescents drinking and taking part in antisocial behaviour. Adults then restricted access by locking up these places children and young people like to go, thereby reducing the amount of physical activity and active transport that they can take part in. These restrictions may be leading children and young people into an unhealthy style of living that may progress into adulthood. Adults need to work with children and help them find ways of being active in their neighbourhood. Ways of doing this can include having access to the local playing field at certain times and by doing this adults are giving children a safe environment where they can engage in physical activity by being active with their friends. By having access to the local playing field at certain times parents may know where their children are and what they are doing. It also helps to increase physical activity levels. This may also increase the amount of people out and about in the neighbourhood, which in turn familiarises the children and young people with the people who live around them. According to Deforche et al. (2010) reducing the negative perception of neighbourhoods and by trying to increase access to facilities might help adolescents overcome some physical activity barriers.

Limited access and increased distance to areas such as playing fields results in a decline in physical activity and active transport levels in children and young people. Having places to go was very important to participants in this study. This is similar to Mitchell et al. (2007) who found that many children desire to travel independently within their neighbourhood but are constrained in their ability to act on this desire.

If the amount of people around the neighbourhood is increased this can have a positive effect on "stranger danger". The more people out and about in the neighbourhood then the less likely children and young people are to encounter strangers as they would get to know all their neighbours. "Stranger danger" was not a major worry to participants in this study and this lack of worry and fear can have a positive effect on active transport levels in children and young people. If children and young people have little to fear about strangers then they are more likely to be out in their neighbourhood. Socialising out in the neighbourhood can help to increase the social capital around the area as people are getting to know each other and can help to increase active transport levels as this helps to create a friendlier neighbourhood environment. In this study strangers were always referred to as males and it seems that children and young people are being brought up with the perception that it is men they should be afraid of not women.

Children and young people are more likely to be abducted by people they know rather than people they do not know. (Carver et al. 2008 and Hillman 1999)

When it comes to choosing their mode of transport children can be seen as 'innocents' in need of protection (Mitchell et al. 2007). Children who were of primary school age (5-12 years) have little freedom when it came to being allowed to walk and cycle alone. This can again relate back to the conceptual framework where a child's age can affect their perceptions of their built and neighbourhood environment.

Research has been conducted across the UK, US and Australia in relation to active travel behaviours, and how they are affected by perceptions of the built environment. There is little research available in Ireland in this area. The current research available cannot be directly generalised to Ireland as there are many factors to take into consideration such as a smaller population, more rural areas, and smaller communities. While the research from other countries can be used as a foundation for exploration into perceptions of the built environment and active travel in Ireland today but if active transport levels are on the decline in Ireland then research that is specific to Ireland is needed to look into ways of increasing it again.

The findings from this study demonstrate that a significant relationship exists between the built and neighbourhood environments and active transport levels in children and young people. Both actual and perceived characteristics of both environments can have an impact on this behaviour. Increasing access to community areas may be beneficial to children's active transport and may also be beneficial to the neighbourhood environment.

Recommendations

As has been highlighted, there is a lack of Irish research regarding the influences of the built and neighbourhood environments on active travel in children and young people. The following outlines recommendations for future research and practice in this area.

A larger study across Ireland is needed to ensure generalisability of results. This study should take into account the effect of factors such as gender, age, rural and urban areas.

A detailed analysis into where children and young people get their perception of stranger danger from is also needed. Do they get it from the media or from their parents?

Due to the lack of a suitable walkability audit for children a single and validated audit needs to be created for use with children and young people.

Children and young people should be informed about the benefits of active transport. This could be done within the Social Personal and Health Education (SPHE) module in Irish schools. Teachers could run workshops on the topic and students could consider ways of increasing active transport around their school and neighbourhoods.

Following on from this local authorities and institutions, such as schools, should be required to consult with children and young people about the physical aspects of their neighbourhood that affect their active transport and physical activity levels, such as the location of pedestrian crossings and cycle lanes. Also, when parks or playing fields are in danger of being closed due to anti-social behaviour, it is important that the social and physical activity needs of children and young people are considered and that they are given a voice in any decision made. If young people are consulted a compromise could be found that enables some access but limits the danger.

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Appendix

Appendix

Appendix A: Letter to Parents

Walking and Cycling in Your Neighbourhood Project: Background Information for Parents

My name is Rose-Ann Gahan I am a research masters student in Waterford Institute of Technology. I am doing a research study into how the design of the neighbourhood, parents' fears or worries about traffic/strangers etc., and how your children feel about where they live influences where they play and where they are allowed to go on their own, on foot or bicycle.

1. Questionnaires

- I would be very grateful if you and your child could fill out the attached questionnaires.
- It contains short, simple tick-the-box questions about your neighbourhood and how your child(ren) travel to various activities.
- If more than one child brings home the questionnaires, please fill in only one parental questionnaire.
- Ask your child to bring tehquestionnaire back to the group for collection ASAP in the envelope provided.
- You are under no obligation to complete these questionnaires. All information supplied will be kept confidential. If you have further queries you can contact my supervisor, Elaine Mullan on 051-302786

2. Workshop

- The aim is to involve children and young people in exploring and discussing independent travel, free play, built environment and their neighbourhood.
- Workshop activities will include brainstorming sessions, practical activities, discussions, poster making, walkability audit, games, photo journals.
- It will last approximately an hour to an hour and a half.
- Any reportable issue that may be disclosed by a child in the course of the workshop will be reported to the Foroige group leader to deal with according to their policy and procedures.

3.Walkability Audit

- Participants aged 15 and above will be asked to complete a walkability audit of the neighbourhood.
- This is a pen and paper rating of the roads, footpaths, crossing points and facilities in the neighbourhood in order to highlight issues with regard to safety, access, comfort and convenience that might reduce walking, cycling and outdoor play activities.

- It is done outdoors and should take 20 to 30 minutes to complete

4.Photo Journal

- During the walkability audit, participants will be asked to take a selection of pictures.
- These pictures will be of barriers to walking and cycling, and things that participants perceive as good or bad in the neighbourhood.
- Participants will be asked not to take pictures of other participants or people in the neighbourhood under any circumstances.

5.Consent

- You need to give consent for your son/daughter to participate in the workshop. Please complete the attached form and return it with your son/daughter to their group.
- Your son/daughter will also be asked to give their consent to participate on the night. Even though you may have agreed that they can participate, if he/she doesn't want to he/she does not have to and can leave or withdraw from the activities at any time.
- The workshop will be voice recorded. No names will be used in the report write up and only men and my supervisor Dr. Elaine Mullan, from WIT will see and hear the tape.
- A full report will be available from Foroige at a later date.
- You ar under no obligation to give consent for your child to participate in the workshop or complete the questions. All information supplied will be kept confidential. If you have any other queries you can contace my supervisor, Dr. Elaine Mullan on 051-302786

6.A Further Chat

- I would be very grateful if you would be willing to meet me to talk about the issues involved in this research on a one-to-one or group basis.
- I would very much like to talk to interested parents about this subject.
- The aim of this chat is to talk to you some more about your perceptions of the neighbourhood and any concerns that you may have that were not mentioned in the questionnaire.
- Please state on your questionnaire if you would be available for a following up chat-it can be done in person, on the telephone or with others.

Your help and time is greatly appreciated.

Yours sincerly,

_____

Rose-Ann Gahan (086-1919468)

Appendix B: Parental Consent Form

Consent Form – Parental consent

Consent Form For: _____

Title: **Built Environment, Independent Travel and Free Play in Children and Young People**

I agree that son/daughter may take part in the above research project. The project has been explained to my son/daughter and to me, and I have read the cover letter which explains in detail what I am allowing my son/daughter to take part in and I will keep this letter for my records.

I understand that agreeing to take part means that I am willing to allow my son/daughter to:

- Take part in the workshop ☐ Yes ☐ No
- Take part in the Walkability audit of neighbourhood ☐ Yes ☐ No
- Take photographs during the Walkability audit ☐ Yes ☐ No
- Have the interview audio-taped ☐ Yes ☐ No

Participant's name: _____

Participant's Age: _____

Parent's / Guardian's Name: _____

Parent's / Guardian's relationship to participant: _____

Parent's / Guardian's Signature: _____

Date: _____

Adapted from a consent form from:
http://www.monash.edu.au/researchoffice/human/consent-form.html

Appendix C: Childrens Consent Form

Walking and Cycling in my neighbourhood

Consent form for young people

This study is about how much walking and cycling you do in your neighbourhood, to school, friends houses etc.

By now you will have filled in all the questionnaires and this workshop is about the same topics. Tonight we will be doing posters, games and talking about the topic and some people will be going outside to rate their area as good/bad on a form and take photos of it.

I understand that:

- Participation in this study is voluntary, which means I don't have to take part if I don't want to and no one will mind.
- Rose-Ann will be asking me questions about walking and cycling in my neighbourhood.
- There are no right or wrong answers and if I don't want to answer some of the questions or do an activity that's fine and I can leave whenever I want.
- Rose-Ann is writing a report for her Waterford Institute of Technology studies.
- She will write about some of the things I've talked about but won't use my name.
- The tape and the copy of my words from the tape will only be seen by her, and her teacher, Elaine Mullan, at WIT.
- The copy of my words from the tape will be kept private.
- If I have any worries about our talk then I can talk about these with my youth leader and/or Rose-Ann during the session.

I consent to doing Rose-Ann's workshop today.

Signature: _____

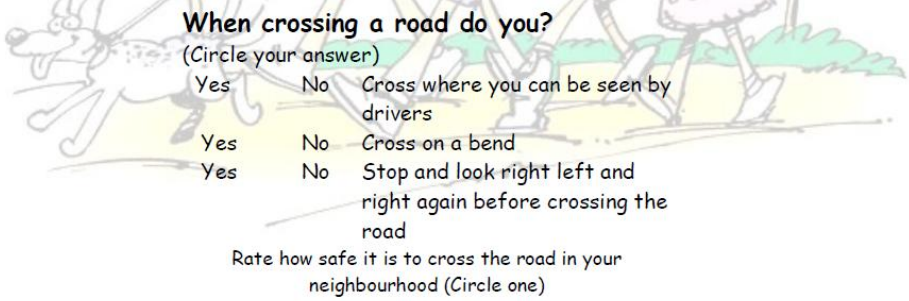
Date:

Appendix D: Childrens Questionnaire

Children's Questionnaire
What do you think about where you live?

Here is how to fill in the questionnaire.

1. Think about all the different roads in your neighbourhood
2. Tick the sentence that you think agrees with the question in relation to your neighbourhood. If you think there are some problems then tick some of the problems that you think are in your neighbourhood.
3. At the end of each question, rate your neighbourhood for that question. ***E.g. Do you have room to walk? Answer: Yes. Rating: 4.***
4. When you have finished answering all the questions, add up the numbers to see how good your neighbourhood is for walking.
5. Practice Question. See how you get on with this.



When crossing a road do you?
(Circle your answer)

Yes	No	Cross where you can be seen by drivers
Yes	No	Cross on a bend
Yes	No	Stop and look right left and right again before crossing the road

Rate how safe it is to cross the road in your neighbourhood (Circle one)

Rating Scale

1————2————3————4————5————6

Awful Many Problems Some Problems Good Very Good Excellent

Name: _____ **Age:** _____

Where you live: _____

Parent Signature: _____ **Date:** _____

1. Do you have room to walk?

_____ Yes _____No (Please Tick), The...
_____ Footpaths start and stop
_____ Footpaths are broken or cracked
_____ Footpaths are blocked by poles, signs, bushes, bins etc.
_____ No footpaths
_____ Too much Traffic
Something else _____

What's your overall rating of this: (Circle one)
1 2 3 4 5 6

2. Is it easy to cross streets?

_____Yes _____ No, because:
_____ The road is too wide
_____ Pedestrian crossings make us wait too long or do not give you enough time to cross
_____ It needs pedestrian crossings or (traffic lights)
_____ Parked cars blocked my view of traffic
_____The footpaths need to be repaired
Something else _____

What is your overall rating of this: (Circle one)
1 2 3 4 5 6

3. Do drivers behave well?

_____ Yes _____No, Drivers...
_____Pull out without looking
_____Reverse out without looking
_____Do not stop for people crossing the street
_____Drive too fast
Something else _____

What is you overall rating of this: (Circle one)
1 2 3 4 5 6

4. Is your neighbourhood a nice place to live?

_____Yes _____ No, My neighbourhood:
_____ Needs more grass, flowers or trees
_____ Has scary Dogs
_____ Has scary People
_____ Is not well lit
_____ Has lots of litter and rubbish
_____ Has dirty air due to cars/bus/ lorry fumes
Something else _____

What is you overall rating of this: (Circle one)
1 2 3 4 5 6

1. _____
2. _____
3. _____
4. _____

Total: _____

How does your neighbourhood stack up?
Add up your ratings and decide.

26-30 Celebrate! You have a great neighbourhood for walking
21-25 Celebrate a little. Your neighbourhood is pretty good.
16-20 Okay, but it needs work.
11-15 It needs lots of work. You deserve better than that.
5-10 It's a disaster for walking!

Appendix E: Parental Questionnaire Version 1

Parental Neighbourhood Questionnaire

Name: _____

Where you live: _____

Email address/Contact number: _____

Age of Children: 0-5 6-10 11-15 15+

1. Do you let your children of any age travel e.g. walk/cycle to some locations e.g. school etc, on their own?

	Yes	No
School		
Mass		
Sports		
Shop		
Friends House		
Relatives House		
Other		

These questions are about the area or "neighbourhood" where you live.

2. Do you think your neighbourhood or area…..

A) is a nice place to live _____

B) has lots of traffic _____

C) has lots of dog dirt _____

D) there is dog danger _____

E) enough lighting _____

F) has places to cross the road safely _____

G) lots of litter _____

H) has parks/greens/trees/flowers _____

I) has good upkeep _____

J) lots of crime/vandalism _____

K) other_____

3. Are there safe places in your neighbourhood or area for your children to play

   Yes ☐ ☐ No If no, why? _____

4. In relation to children to you feel that drivers:
   A) respect that children are present
   B) have no respect that children are present
   C) drive around too fast
   D) do not stop for people
   E) other: _____

If you have additional comments or concerns that have not been identified or mentioned in this questionnaire, please feel free to add them here.

_____

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Appendix F: Parental Questionnaire Version 2

Parental Neighbourhood Questionnaire

Name: _____

Where you live: _____

Age of Child(ren): 0-5 6-10 11-15 15+

Sex of Child(ren): Boy ☐ Girl ☐

Available for Chat: Yes ☐ No ☐

Email address/Contact number: _____

These questions are about the area or neighbourhood where you live. Please circle on the scale which answer applies to you.

	Strongly Disagree	*Disagree*	*Neither Agree/ Disagree*	*Agree*	*Strongly Agree*
There are major barriers to walking/cycling in my local neighbourhood that make it hard for my child to get from place to place e.g. major roads	1	2	3	4	5
Lots of children play or hang out in our street	1	2	3	4	5
Stranger danger is a concern of mine	1	2	3	4	5
My child would be safe walking home from a bus stop after dark	1	2	3	4	5
My neighbourhood has parks/greens where kids can play	1	2	3	4	5
There is heavy traffic in our local streets	1	2	3	4	5
My neighbourhood is generally free from litter, rubbish, graffiti and dog dirt	1	2	3	4	5
It is safe for my child to play or hang out in the street outside our house	1	2	3	4	5
There is danger from unsupervised dogs	1	2	3	4	5
In general, drivers in my area drive too fast	1	2	3	4	5
Road safety is a concern in our area	1	2	3	4	5
There is a high crime rate in our neighbourhood	1	2	3	4	5
My neighbourhood is safe for my child to walk/ cycle around the area alone in the daytime	1	2	3	4	5
I am worried about trouble makers hanging around my neighbourhood	1	2	3	4	5
My neighbourhood has places to cross the road safely	1	2	3	4	5
I am worried that my child might be assaulted when out alone in our neighbourhood	1	2	3	4	5

If you have any additional comments or concerns that have not been identified or mentioned in this questionnaire, please feel free to add them here.

_____

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Thank you for taking the time to fill out this questionnaire

Appendix G: Original Childrens Questionnaire

Take a walk and use this checklist to rate your neighborhood's walkability.

How walkable is your community?

Location of walk _____

_____

Rating Scale: 1 awful; 2 many problems; 3 some problems; 4 good; 5 very good; 6 excellent

1. Did you have room to walk?

☐ Yes ☐ Some problems:

- ☐ Sidewalks or paths started and stopped
- ☐ Sidewalks were broken or cracked
- ☐ Sidewalks were blocked with poles, signs, shrubbery, dumpsters, etc.
- ☐ No sidewalks, paths, or shoulders
- ☐ Too much traffic
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) _____

1 2 3 4 5 6 _____

2. Was it easy to cross streets?

☐ Yes ☐ Some problems:

- ☐ Road was too wide
- ☐ Traffic signals made us wait too long or did not give us enough time to cross
- ☐ Needed striped crosswalks or traffic signals
- ☐ Parked cars blocked our view of traffic
- ☐ Trees or plants blocked our view of traffic
- ☐ Needed curb ramps or ramps needed repair
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) _____

1 2 3 4 5 6 _____

3. Did drivers behave well?

☐ Yes ☐ Some problems: Drivers...

- ☐ Backed out of driveways without looking
- ☐ Did not yield to people crossing the street
- ☐ Turned into people crossing the street
- ☐ Drove too fast
- ☐ Sped up to make it through traffic lights or drove through traffic lights?
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) _____

1 2 3 4 5 6 _____

4. Was it easy to follow safety rules? Could you and your child...

☐ Yes	☐ No	Cross at crosswalks or where you could see and be seen by drivers?
☐ Yes	☐ No	Stop and look left, right and then left again before crossing streets?
☐ Yes	☐ No	Walk on sidewalks or shoulders facing traffic where there were no sidewalks?
☐ Yes	☐ No	Cross with the light?

Locations of problems: _____

Rating: (circle one) _____

1 2 3 4 5 6 _____

5. Was your walk pleasant?

☐ Yes ☐ Some unpleasant things:

- ☐ Needed more grass, flowers, or trees
- ☐ Scary dogs
- ☐ Scary people
- ☐ Not well lighted
- ☐ Dirty, lots of litter or trash
- ☐ Dirty air due to automobile exhaust
- ☐ Something else _____

Locations of problems: _____

Rating: (circle one) _____

1 2 3 4 5 6 _____

How does your neighborhood stack up? Add up your ratings and decide.

1. ____
2. ____
3. ____
4. ____
5. ____

Total ____

26-30	Celebrate! You have a great neighborhood for walking.
21-25	Celebrate a little. Your neighborhood is pretty good.
16-20	Okay, but it needs work.
11-15	It needs lots of work. You deserve better than that.
5-10	It's a disaster for walking!

Appendix H: Travel Questionnaire

Tick the box that shows what form of transportation you use to get to the different places.

Only tick the box that you do a lot

If you play more than once sport tick the box on how you travel to it and write the name of the sport

	Walk	Cycle	Parents Car	Friends Car	Bus
School					
Shop					
Friends House					
Mass					
Relations/ Family					
Sports					
Other					

Appendix I: Carver et al. (2008) Original Questions

Parents' Perceptions of Neighborhood Safety According to Children's Age Group (Cohort) and Sex

Parental perception of neighborhood	Cohort	Boys' parents		Girls' parents	
		n	Agree[a]	n	Agree[a]
Road safety					
There are major barriers to walking/cycling in my local neighborhood that make it hard for my child to get from place to place (eg, freeways, major roads).					
There is heavy traffic in our local streets.					
Road safety is a concern in our area.					
Physical infrastructure					
There are no lights/crossings for my child to use.					
There are traffic slowing devices (eg, speed humps) in our local streets.					
Incivilities					
My neighborhood is generally free from litter, rubbish, graffiti.[b]					
There is a high crime rate in our neighborhood.					
I am worried about troublemakers hanging around my neighborhood.					
Stranger danger is a concern of mine.					
Personal safety of child					
It is safe for my child to play or hang out in the street outside our house.					
Lots of children play or hang out in our street.					
My neighborhood is safe for my child to walk/ cycle around the block alone in the daytime.					
My child would be safe walking home from a bus stop or train stop at night.					
I am worried that my child might be assaulted when out alone in our neighborhood.[b]					

Appendix J: Original Walkability Audit

Walking
WITH A PURPOSE

Walking is a great way to be physically active. Walking is free, easy to fit into daily life, and can be a great form of transportation. The benefits can even be accumulated in short bouts in order to reach the target of 60 minutes of daily activity for children. Everyone benefits from walking, but walking needs to be safe and easy. Communities are looking to improve the pedestrian environment as a strategy for revitalizing business districts, increasing the safety and ability of children to walk to school, improving the health of residents, and creating a greater sense of "place" and community character. According to the Smart Growth Network, walkable communities make pedestrian activity possible, thus expanding transportation options, and creating a streetscape that better serves a range of users including pedestrians, bicyclists, transit riders, and automobiles.

A walkable community is essential for our children too. According to the Centers for Disease Control and Prevention (CDC) in 1969, approximately half of all school children walked or bicycled to or from school and 87 percent of those living within one mile of school walked or bicycled. Today, less than 15 percent of children and adolescents walk or bike to school. This decrease in physical activity is impacting Iowa's children. Beginning in the fall of 2005, the Iowa Department of Public Health has measured the height and weight of over 4,000 3rd, 4th, and 5th

grade students in 12 schools across the state. Of those children measured, 62.3% had a normal Body Mass Index (BMI), 19.6% were at risk for overweight, and 18.1% were overweight. This decrease in physical activity and increase in weight has taken a financial toll on Iowans. Total annual health care costs attributable to adult obesity in Iowa are estimated at $783 million.[1]

This resource will help your school conduct a walkability assessment of its neighborhood. The checklist will help assess what makes the walking environment inviting and safe, as well as identify barriers that exist. After the assessment, school staff can help students become advocates for a more walkable community.

1. Finkelstein EA, Fiebelkorn IC, Wang G. State-level estimates of annual medical expenditures attributable to obesity. *Obesity Research*. 2004; 12 (1): 18-24.

Where to complete the assessment:

- Along the main routes that students would use to walk to school.
- Other destinations in town:
  - a community park
  - the library
  - a local business
  - the police station
  - city hall
  - wellness center
  - sports complex
  - pool/aquatic center

Walking is a great way to be physically active.

Community members to invite to the assessment:

School

- Principal and other administrators
- Parents and students
- Teachers (physical education or health teachers are a good place to start)
- PTA/PTO representative
- School nurse
- School district transportation director
- School improvement team or wellness council member
- Adult school crossing guards

Community

- Community members, including children, adults and senior citizens
- Neighborhood or community association members
- Local businesses
- Local pedestrian, bicycle and safety advocates

Local Government

- Mayor's office or council member
- Transportation or traffic engineer
- Local planner
- Public health professional
- Public works representative
- Law enforcement officer
- State or local pedestrian and bicycle coordinator
- Parks and Recreation

Walkability Audit Checklist

CONCERNS	LOCATION	COMMENTS
1. Do you have room to walk? ❑ No sidewalks or safe alternative for pedestrians/bikes ❑ Sidewalks broken, cracked or uneven ❑ Sidewalk blocked or snow, leaves, debris or soil covering the route ❑ Sidewalks blocked with poles, signs, shrubbery, etc. ❑ Sidewalks too close to fast-moving traffic ❑ Not enough room for two people to walk side-by-side ❑ Sidewalks lack ramps (curb cuts) for wheelchairs, strollers and wagons ❑ Cars or trucks blocking the sidewalk		
2. Is it easy to cross the streets? ❑ No traffic signals/crosswalks ❑ Traffic signals don't allow enough time to cross ❑ View of traffic blocked by parked cars, trees, plants or snow banks ❑ Road too wide to cross safely		
3. Do drivers behave safely? ❑ Drive too fast ❑ Ignore traffic signals and stop signs ❑ Back up without looking ❑ Speed up to make traffic light or run red lights ❑ Drivers do not yield to pedestrians		
4. Do walkers/bikers behave safely? ❑ Don't look both ways before crossing ❑ Not using the crosswalks to cross streets ❑ Not walking on sidewalk, or on shoulder facing traffic where there are no sidewalks		

CONCERNS	LOCATION	COMMENTS
5. Is the route pleasant to walk/ bike? ❑ No separation between the car traffic and walkers ❑ Landscape unpleasant (lack of trees, grass, flowers) ❑ Scary dogs ❑ Poorly lit ❑ Littered or dirty		
6. Do the sidewalks let you walk to places you want to go? ❑ School ❑ Other places in your community ❑ Library ❑ Swimming pool ❑ Parks and trails ❑ City offices and municipal buildings ❑ Churches		

Discussion questions after the walk:

- What areas of the walk or ride were the most enjoyable? Least enjoyable? And why?
- What things would make it hard, unpleasant or impossible to walk or bike in general? What barriers or things might prevent someone from choosing to walk or bike and instead drive?
- What things make a walk or bike ride more enjoyable?
- What places would students think people might like to be able to walk or bike to in the community or surrounding area?
- Who else in the community would be concerned about walkability? Who could help make our community more walkable?

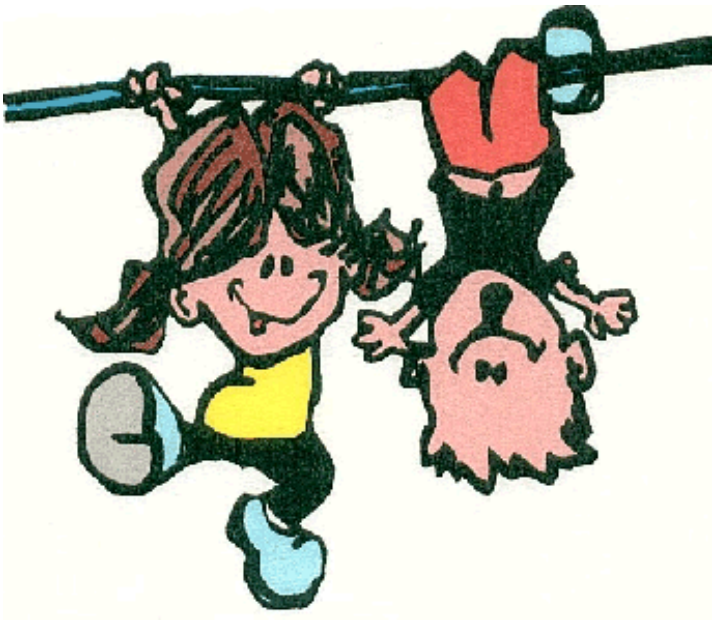
Appendix K: Walkability Audit Used in Study

Neighbourhood Walkability Audit

How to fill in Audit

- ✓ While walking through your neighbourhood tick the sentence that you think agrees with the question.

- ✓ If you think there are some problems that are not mentioned then fill these in, in the comments box.



Area: _____

Time: _____

Date of Audit: _____

Walkability Audit

Observations	Yes	No
1. Do you have room to walk?		
a) No footpaths		
b) Footpaths are broken or cracked		
c) Footpath is blocked by poles, signs or trees		
d) Footpath lacks ramps for buggys or wheelchairs		
e) Cars are blocking the footpath		
2. Is it easy to cross the road?		
a) No pedestrain crossing		
b) Traffic lights dont allow enough time to cross		
c) View of the oncoming traffic is blocked		
d) Road is too wide to cross safely		
3. Do drivers behave safely?		
a) They drive too fast		
b) Ignore traffic signals and stop signs		
c) Reverse without looking		
d) Drivers to not yield to pedestrians		
4. Do other road users such as cyclists/walkers behave safely?		
a) Dont look both ways		
b) Have no respect for other people using the footpath		
5. Is it a pleasant place to walk?		
a) No separation between the car traffic and walkers		
b) Lack of trees, grass, flowers		
c) Scary dogs		
d) Poor lighting		
e) Full of litter		
6. Do the footpaths let you walk to the places you want to go?		
a) School		
b) Friends house		
c) Community Hall		
d) Parks/Green areas		
e) GAA Field		
f) Soccer Field		
g) Other		

Other comments about your neighbourhood:

_____

_____

_____

Appendix L: Workshop Layout

Workshop

Lesson Plan

Aim and objectives: to raise awareness of the multiple benefits of walking and cycling. To investigate how the design of the neighbourhood, parents' fears or worries about traffic/strangers etc., and children's' perceptions of their neighbourhood influence where they play and the amount of independent travel (walking and cycling) that they take part in.

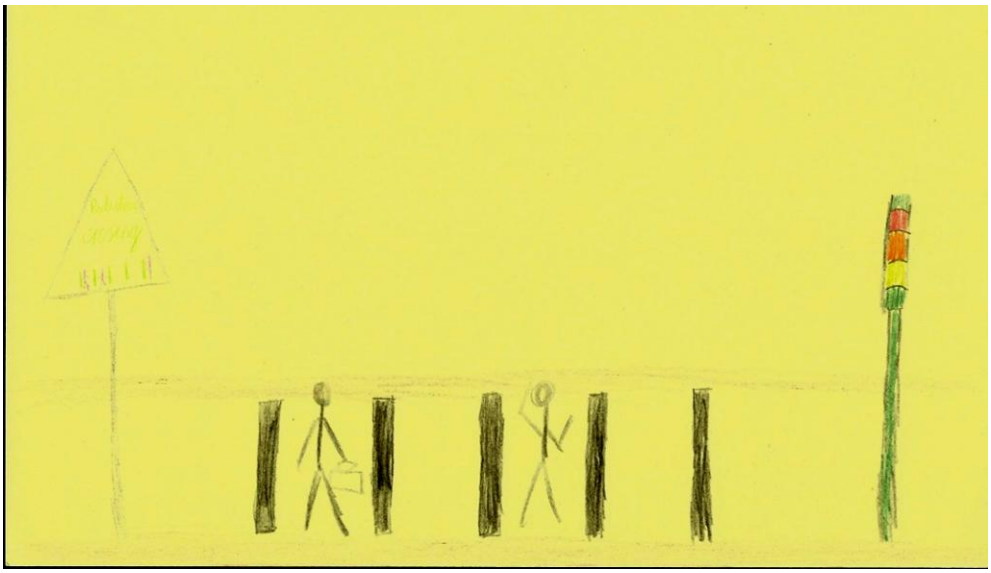
Key skills/relevant topics: Exploring local area, road safety, walking, cycling, neighbourhood perceptions.

Resources: Walkability Audit, Flip Chart, computer/lap-top, coloured pens, paper for posters, crayons, markers and post-its.

Activity	**Actions**	**Time (approx)**
Warm-Up	Choose a game the incorporates walking	10 mins
Brainstorm – why walk and cycle?	Get ideas from the group Benefits of walking cycling for health & environment Social Benefits	10 mins
Background on topic	Inform group of background of study Tell them about benefits, how different people travel	5 mins
Neighbourhood Audit	Choose a group of the older children to complete a 20 minute audit of area around youth group. Give them a list of things to take pictures off. (see attached sheet)	20 mins
Posters	While group is on audit, ask rest of group to create posters for their youth group that promotes more walking and cycling. While they are creating posters discuss with	20 mins

	the different groups what they're drawing and why. If groups have posters created before the group doing the audit are back, hand them wordsearch (see below)	
Discussion on Audit and Pictures and overall topic	Ask the group to discuss what was found during the audit. - What did you notice about your neighbourhood? - What can be done to improve the walkability of the neighbourhood - Agree or disagree with pictures - Explanation of pictures - What they think of their neighbourhood - What do they feel can be changed everywhere and not just their neighbourhood - Who they think is responsible for the change - Research questions	25-30 mins

Appendix M: Drawings



Appendix N: Words Linked Together

I Think my neighbourhood is:

Fun – 4 Dangerous – 2 linked with unsafe Beautiful - 2 linked with clean

Noisey – 1 other Awful – 3 Friendly – 3 Great – 1 linked with exciting

Dirty - 4

Cool – 1 linked with exciting

Clean - 4

Quiet - 3

Ok – 4 linked with good

Smokey – 1 linked with dirty

Small – 1 other

Horrible – 1 linked with awful

Nice people – 2 linked with friendly

Should be safer – 1 linked with unsafe

Deadly – 1 linked with ok

Alright – 1linked with ok

Unsafe - 4

Safety – 1 other

Amenities (not enough) – 1 other

Unsafe drivers – 1 other

Good – 6

Grand – linked with good

Boring - 3

Bland – 1 linked with boring Fun – 1 Exciting - 4

Words with similar meaning were linked together.